FURUNO

OPERATOR'S MANUAL

INMARSAT-C MES

Model **FELCOM20**

FURUNO ELECTRIC CO., LTD.

www.furuno.com

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IMPORTANT NOTICES

General

- This manual has been authored with simplified grammar, to meet the needs of international users.
- The operator of this equipment must read and follow the instructions in this manual. Wrong operation or maintenance can void the warranty or cause injury.
- Do not copy any part of this manual without written permission from FURUNO.
- If this manual is lost or worn, contact your dealer about replacement.
- The contents of this manual and the equipment specifications can change without notice.
- The example screens (or illustrations) shown in this manual can be different from the screens you see on your display. The screens you see depend on your system configuration and equipment settings.
- Save this manual for future reference.
- Any modification of the equipment (including software) by persons not authorized by FURUNO will void the warranty.
- The following concern acts as our importer in Europe, as defined in DECISION No 768/2008/EC.
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How to dispose of this product

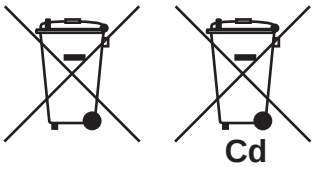
Dispose of this product according to local regulations for the disposal of industrial waste. For disposal in the USA, see the homepage of the Electronics Industries Alliance (http://www.eiae.org/) for the correct method of disposal.

How to dispose of a used battery

Some FURUNO products have a battery(ies). To see if your product has a battery, see the chapter on Maintenance. To dispose of a used battery, tape the + and - terminals of the battery before disposal to prevent fire, heat generation caused by short circuit.

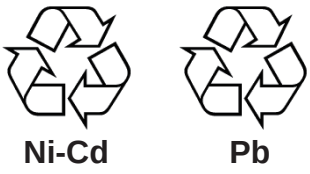
In the European Union

The crossed-out trash can symbol indicates that all types of batteries must not be discarded in standard trash, or at a trash site. Take the used batteries to a battery collection site according to your national legislation and the Batteries Directive 2006/66/EU.



In the USA

The Mobius loop symbol (three chasing arrows) indicates that Ni-Cd and lead-acid rechargeable batteries must be recycled. Take the used batteries to a battery collection site according to local laws.



In the other countries

There are no international standards for the battery recycle symbol. The number of symbols can increase when the other countries make their own recycle symbols in the future.

SAFETY INSTRUCTIONS

Follow the safety instructions listed below and throughout this manual to prevent damage to your equipment or vessel and to prevent harm to the operator or other personnel on-board. The results of failing to follow the instructions and guidelines outlined herein are listed below.

WARNING Indicates a condition that can cause death or serious injury if not avoided.

Warning, Caution Prohibitive Action Mandatory Action

WARNING

Do not open the equipment.

This equipment uses high voltage that can cause electrical shock. Only qualified technicians can work inside the equipment.

Turn off the power at the switchboard if something is dropped inside the equipment.

Fire or electrical shock can result if the power remains on.

Turn off the power at the switchboard if the equipment is emitting smoke or fire.

Fire or electrical shock can result if the power remains on.

Turn off the power at the switchboard immediately if you feel the equipment is not working properly.

Fire or electrical shock can result if the power remains on.

Do not disassemble or modify the equipment.

Fire, electrical shock or serious injury can occur.

WARNING

Do not operate the equipment with wet hands.

Fire or electrical shock can result.

Keep the equipment away from rain, water and water splash.

Fire or electrical shock can result if water gets into the equipment.

Use the proper fuse.

Use of the wrong fuse can cause fire or electrical shock.

Do not place liquid-filled containers on or near the equipment.

Fire or electrical shock can result if a liquid spills into the equipment.

Do not approach the antenna closer than the distance shown below when transmitting.

The antenna emits radio waves that can be harmful, particularly the eyes.

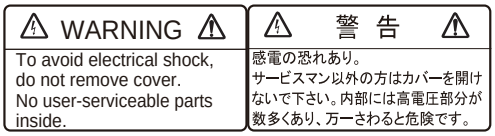
Radiation level	Distance
100 W/m^2	0.1 m
50 W/m^2	0.15 m
10 W/m^2	0.4 m

About the TFT LCD

The TFT LCD is constructed using the latest LCD techniques, and displays 99.99% of its pixels. The remaining 0.01% of the pixels may drop out or are constantly lit. Additionally, the LCD has a limited viewing angle and may flicker. However, these are not indications of malfunction.

Warning Label

A warning label is attached to the terminal unit. Do not remove the label. If the label is missing or damaged, contact a FURUNO agent or dealer about replacement.



Name: Warning Label (2)
Type: 03-129-1001-3

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FOREWORD

A Word to FELCOM20 Owners

Congratulations on your choice of the FURUNO FELCOM20 INMARSAT-C MES. We are confident you will see why the FURUNO name has become synonymous with quality and reliability.

Since 1948, FURUNO Electric Company has enjoyed an enviable reputation for innovative and dependable marine electronics equipment. This dedication to excellence is furthered by our extensive global network of agents and dealers.

This equipment is designed and constructed to meet the rigorous demands of the marine environment. However, no machine can perform its intended function unless operated and maintained properly. Please carefully read and follow the recommended procedures for operation and maintenance.

We would appreciate hearing from you, the end user, about whether we are achieving our purposes.

Thank you for considering and purchasing FURUNO equipment.

Features

Mainly consisting of an antenna unit and a terminal unit, the FELCOM20 provides the full range of distress and general communication services for mobile and fixed terrestrial subscribers in the Inmarsat C communication network. Its compact size permits installation where space is limited.

The main features are:

- Complies with Conforms to the following standards: IEC 60945, IEC 61097-4, IEC 61162-1, IEC 61162-450, IEC 62288, IEC 62923-1, IEC 62923-2, MSC.147(77), MSC.263(84)
- Intuitive touch control operation.
- Full coverage of Inmarsat C services: EGC, Internet E-mail, distress messaging, polling, data reporting.
- GMDSS compliant with optional printer, AC/DC power supply unit.
- Terminal unit accepts a wide variety of external equipment: Distress Alert/Received Call Unit IC-305, Alarm Unit IC-350, Alarm Unit IC-306, Ship Security Alert System IC-307, navigator, etc.
- Shipborne LAN Ethernet.
- GPS receiver (option) built in the terminal unit provides GPS-generated position.
- Remote maintenance.

Program No.

Terminal Unit: 1650291-01.** (** denotes minor modifications.)

About Inmarsat C

This manual provides a brief introduction to the Inmarsat C system, in chapter 1. For further information, see the Inmarsat home page at www.inmarsat.com.

CE/UKCA declaration

With regards to CE/UKCA declarations, please refer to our website (www.furuno.com), for further information about RoHS conformity declarations.

Disclosure of Information about China RoHS

With regards to China RoHS information for our products, please refer to our website (www.furuno.com).

Standards used in this manual

- Key names are shown in boldface type. For example, **Enter** key for the keyboard, **BRILL** key for the terminal unit.
- Menu items, on-screen indications, and the names of pop-up menus and pop-up windows are shown in brackets. For example, the [Setting] menu.
- Messages shown on the screen are enclosed in quotations. For example, "Are you sure to transmit?"
- The FELCOM20 is operated by touch or key (by using the keyboard) operation. For details, see section 2.6. The following operations are described as the word “select” in this manual.
  - Tap the icon, button, or menu on the screen.
  - Press the appropriate key to select the icon, button, or menu.

  For example, “Select [Menu]”. In some cases, the key operation is described in bold with brackets after “Select [xxx]”. For example, “Select [Apply] (**Enter**)”.

Software used in this product

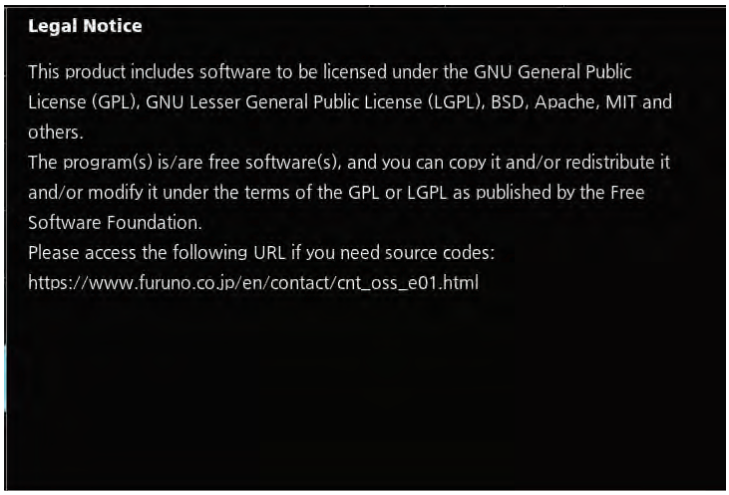
This equipment uses the following open source software.

- Portions of this software are copyright© 2016 The Free Type Project (www.freetype.org). All rights reserved.
- This product includes software to be licensed under the GNU General Public License (GPL) version 2.0, GNU Lesser General Public Software License (LGPL) version 2.0, Apache, BSD and others. The program(s) is/are free software(s), and you can copy it and/or redistribute it and/or modify it under the terms of the GPL version 2.0 or LGPL version 2.0 as published by the Free Software Foundation. Please access to the following URL if you need source codes: https:// www.furuno.co.jp/en/contact/cnt_oss_e01.html.

You can get this information as follows. For operation method, see section 2.6.

1. Select [Menu] (**F6**) to open the [Menu] screen.

2. Select [Help Desk].

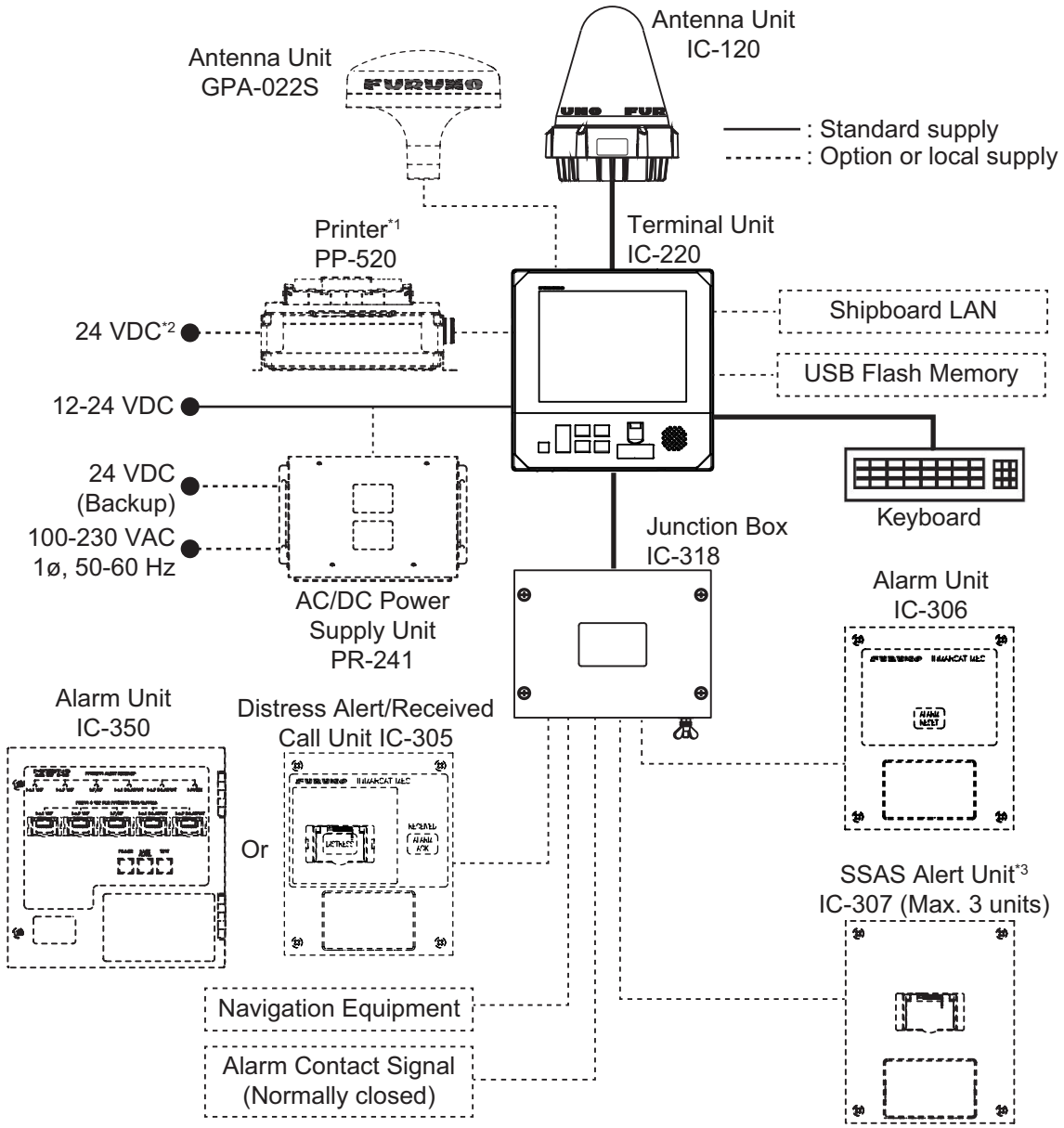


About the password

A password is required to open the Admin and SSAS menus. No initial password is set. To prevent unauthorized access to specific menus, set a password by the device administrator (captain, etc.) before using this equipment.

When setting the SSAS password, initialize the password first. For details, see subsection 2.7.3.

SYSTEM CONFIGURATION



*1: Mandatory for EGC operation as required by IMO Res.MSC.306(87).
*2: For 12 VDC power supply, DC-DC converter is required to use the PP-520.
*3: Standard supply for SSAS specifications. At least two units are required.

Note: If using this equipment as GMDSS equipment, use an external navigation equipment as the GNSS position data source setting, or install both the GPS receiver (GNSS board kit) and the external GNSS antenna (GPA-022S) to use the internal GPS receiver as the data source. This equipment can use the positioning data even if the GNSS antenna is not installed, but the requirements for GMDSS are not satisfied.

Category of units

Unit	Category
Antenna Unit	Exposed to the weather
Other Units	Protected from the weather

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1. INMARSAT C SYSTEM OVERVIEW

1.1 Introduction

The Inmarsat C system provides worldwide telex and data transmission and reception of written information to owners of an Inmarsat C transceiver or a terrestrial telex network via satellite. Further, e-mail can be sent via the internet.

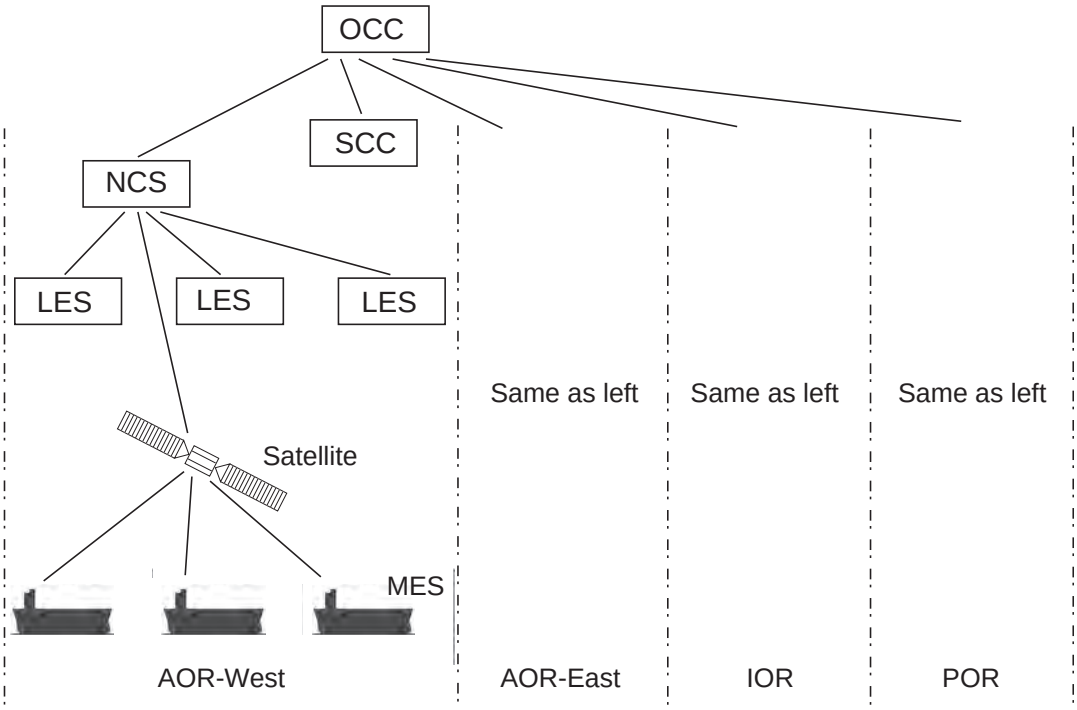
Communication mode is store-and-forward telex, which means all information sent is first stored at an LES (Land Earth Station) and then delivered to designated party.

An EGC (Enhanced Group Call) receiver is built in the FELCOM20 system to receive the following types of messages, broadcast by LESs:

- SafetyNET^{TM}: Governments and maritime authorities can use this service to distribute maritime safety information to ships within selected areas.
- FleetNET^{TM}: Commercial subscription organizations or shipping companies can use this service to transmit trade information (for example, company news or market prices) simultaneously to a selected group of ships, to provide up-to-the-minute information.
- EGC system-related messages are sent by Inmarsat to certain shipping companies and geographical areas.

The FELCOM20 system allows you to make distress calls. They are given immediate priority over all other calls, and are automatically routed to a land-based Rescue Coordination Centre (RCC).

Besides its primary application of ship-shore, shore-ship or ship-ship communications, the Inmarsat C service has also proved beneficial to trucking firms who have found it indispensable for communicating with their vehicles. This manual, however, concentrates on ship applications, the main application.



OCC: Operation Control Center
SCC: Satellite Control Center
NCS: Network Coordination Station
LES: Land Earth Station
MES: Mobile Earth Station

Inmarsat C system configuration

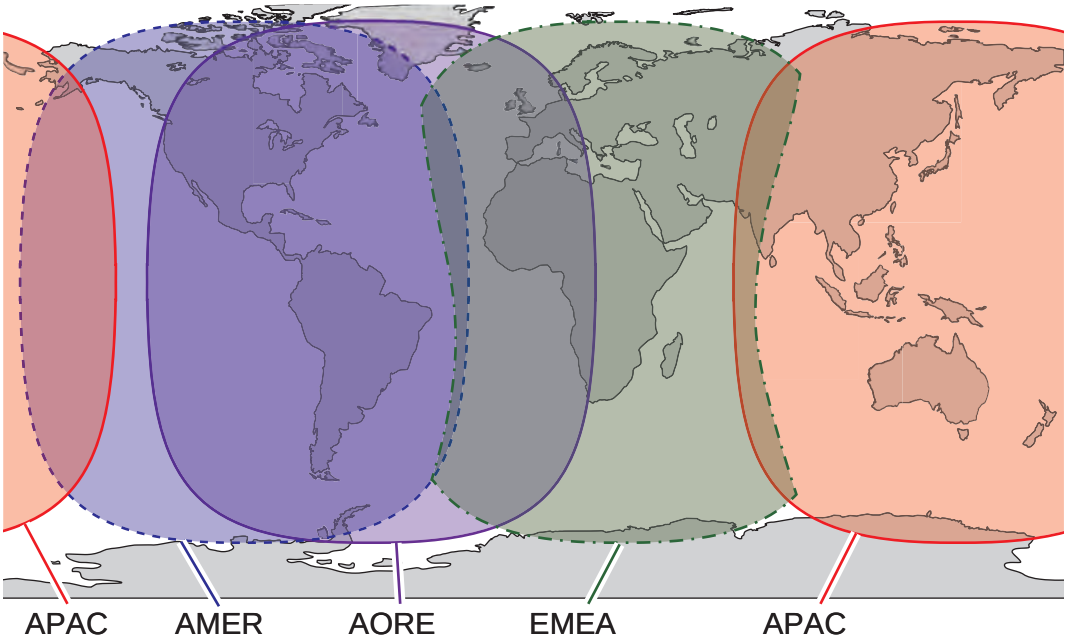
The Inmarsat C system consists of the Operation Control Center (OCC), Satellite Control Centers (SCC), Network Coordination Stations (NCS), Land Earth Stations (LES) and Mobile Earth Stations (MES). The OCC, located at Inmarsat's London headquarters, coordinates a wide range of activities in the Inmarsat system, including commissioning of mobile earth stations.

The Inmarsat C system divides the world into four regions and each region is covered by its own satellite.

Inmarsat system satellites

Region	Satellite	Satellite position
AOR-West	I-4 F3 AMER	98.4°W
AOR-East	I-3 F5 AORE	54.0°W
IOR	I-4 Alphasat EMEA	25.0°E
POR	I-4 F1 APAC	143.5°E

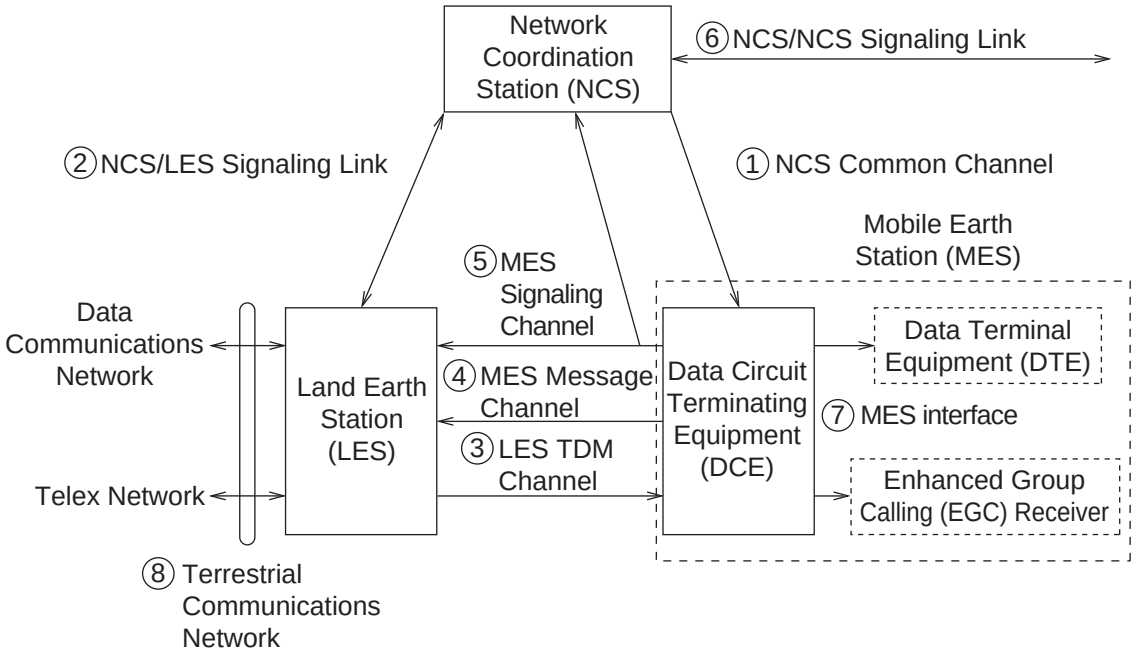
In each region there is one NCS and several LESs. The NCS keeps track of all Inmarsat C transceivers in its region and broadcasts information such as navigational warnings, weather reports and news. The LESs provide the link between the MES and the terrestrial telecommunications networks via satellite.



Inmarsat C satellite coverage area

1.2 Communications Network

The illustration below shows the Inmarsat C communications network.



No.	Section	Description
1	NCS common channel	The NCS has two major functions: • Transmit information on a common channel. • Transmit EGC messages to MESs.
2	NCS/LES signaling link	The NCS/LES signaling link connects the NCS to all LESs in its region. All EGC messages pass through this link.

No.	Section	Description
3	LES TDM channel	The LES TDM channel carries the circuit control signal for MES and transmits messages from LES to MES.
4	MES message channel	The MES message channel carries messages from MES to LES.
5	MES signaling channel	The MES signaling channel transmits requests, distress alerts, data reports, etc. This channel also carries login and logout from MES to NCS.
6	NCS/NCS signaling link	This NCS/NCS signaling link connects all NCSs. This link exchanges data among NCSs operating in different ocean regions.
7	MES interface	The MES consists of the Data Circuit Terminating Equipment (DCE) and the Data Terminal Equipment (DTE). The DCE consists of the antenna unit, and the DTE consists of a terminal unit, a keyboard and printer.
8	Terrestrial network interface	The major functions of the LESs are: • Telex store-and-forward conversion • Handling EGC messages • Handling distress alerts • Data reporting and polling

Types of MES

There are three types of MES: class 1, class 2 and class 3. The FELCOM20 is a class 2 MES.

Class 1:
- Transmits messages to LES.
- Receives messages from LES.

Class 2:
- The functions of class 1 plus operation as an EGC receiver when not transmitting or receiving.
- EGC-only receiver

Class 3: The function of class 1 plus simultaneous operation as an EGC-only receiver.

2. OPERATIONAL OVERVIEW

2.1 Terminal Unit

The terminal unit is the heart of the FELCOM20 system, creating, transmitting and receiving messages.

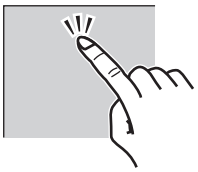
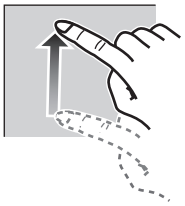


Note: The response of the LCD is slower in low temperatures.

No.	Control	Function
1	⏻ (Power)	Turns the Terminal Unit and equipment connected to the Terminal Unit on or off.
2	**BRILL**	• **BRILL**: Opens the [Dimmer] window. • **+**: Increases the display brightness. • **-**: Decreases the display brightness.
3	**DAY/NIGHT**	Switches the color mode between daytime and nighttime.
4	**ALERT LIST**	Opens the Alert list.
5	**FUNC**	Opens the [Diagnostics] screen.
6	**SILENCE**	Silences the audio alarm.
7	**DISTRESS**	Transmits the distress alert to an LES, when there is a life-endangering situation on your ship.

Touchscreen operations

Two touchscreen operations with a finger are available as follows.

Operation	Function
Tap 	• Select a menu item. • Move the cursor. • Confirm the item selected.
Swipe/ drag 	• Scroll the screen. • Drag the slider thumb to adjust the setting.

Considerations in touchscreen operation

- Do not touch the screen when turning on the power. Mis-operation can result.
- Waterdrops or dirt on the screen can cause mis-operation and slow touch response. Wipe the screen with a dry cloth to remove the water or dirt, then turn on the power again.
- This equipment uses a capacitive touch screen. Tap the screen with your fingertips directly. Do not use sharp objects (needle, pen, nail) or a stylus pen. Be careful not to scratch the screen.
- Touchscreen performance may be reduced when wearing gloves.
- Do not put objects (adhesive-backed paper, etc.) on the screen. Mis-operation can result.
- Keep the equipment away from radio antennas, fluorescent lights, solenoid valves and electronic devices to prevent unintended operation cause by electrical noise.
- The front panel is made of glass. If the front panel is damaged, do not try to repair it yourself. Unauthorized repair will void the warranty. Contact your dealer about repair or replacement.

Key sound

When you operate a key, a single beep can sound to signify correct operation. To activate the beep sound, do the following. (For the operation method, see section 2.6.)

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Key Volume].
3. Turn on [Key Beep].
4. Select [Apply] (**Enter**).

2.1.1 Audio alarm

The terminal unit releases an audio alarm under the following conditions.

Unit	Telex, e-mail received	Distress ACK received	EGC message received			Trouble found
			Distress	Urgency	Safety/ Normal	
Terminal unit IC-220	NO	YES	YES	YES	NO	YES
Distress alert/ Received call unit IC-305, Alarm unit IC-350	NO	YES	YES	YES	NO	NO
Alarm unit IC-306	YES	NO	NO	NO	NO	YES

2.1.2 How to turn the power on/off

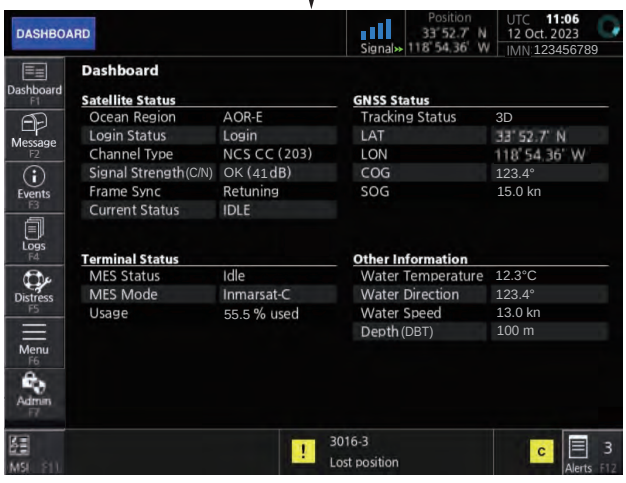
Note 1: Do not touch the screen when turning on the power. Mis-operation can result.

Note 2: If the display is dirty, wipe it off and then turn the power on.

Press the ⏻ key to turn the power on. The start-up screen appears then the [Dashboard] screen appears.



Start-up screen



[Dashboard] screen

2.1.3 How to adjust the brilliance of the display and panel

You can adjust the brilliance of the display and panel as shown below. (For the operation method, see section 2.6.)

1. Press the **BRILL** key to open the [Dimmer] window.



2. To adjust the display brilliance, do one of the following:
   - Press the **+** key on the **BRILL** key to increase the display brilliance, the **-** key to decrease the display brilliance.
   - Drag the slider thumb in [Display].
3. To adjust the panel brilliance, drag the slider thumb in [Key].
4. Select [Close] (**Esc**) to close the window.

How to enable adjustment of the brilliance from external equipment

See "How to enable switching the mode from external equipment" on page 2-5.

2.1.4 How to switch between day and night modes

To switch between day mode and night mode, do one of the following:

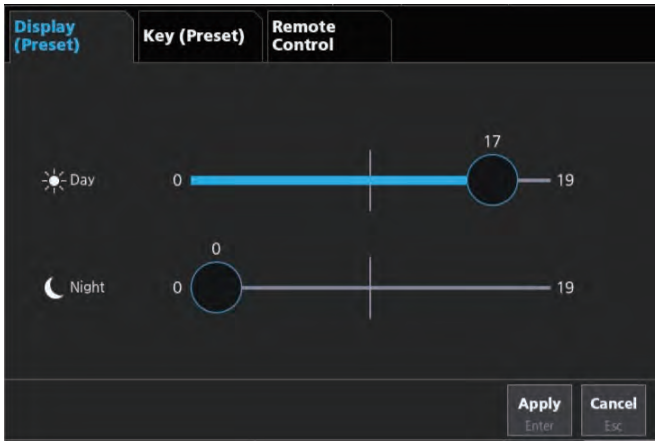
- Press the **DAY/NIGHT** key.
- Press the **BRILL** key to open the [Dimmer] window, then select [Day] or [Night]. To close the window, select [Close] (**Esc**).

How to preset day and night modes

You can preset the brilliance of the display and panel for day and night mode. (For the operation method, see section 2.6.)

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Dimmer].

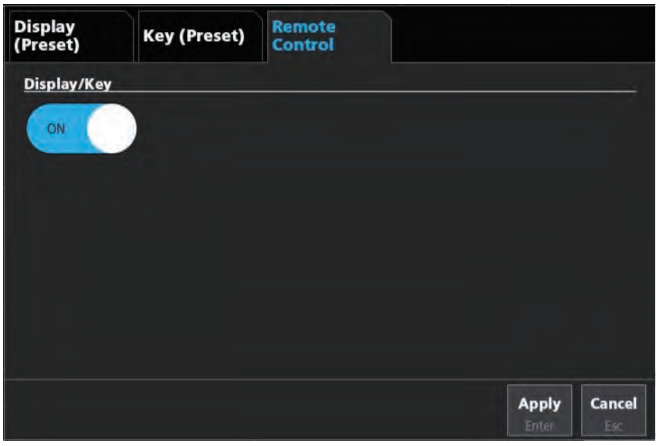
3. Select the [Display (Preset)] tab.



4. Drag the slider thumb in [Day] to set the display brilliance for day.
5. Drag the slider thumb in [Night] to set the display brilliance for night.
6. Select [Apply] (**Enter**) to confirm the selection.
7. Select the [Key (Preset)] tab.
8. Drag the slider thumb in [Day] to set the panel brilliance for day.
9. Drag the slider thumb in [Night] to set the panel brilliance for night.
10. Select [Apply] (**Enter**) to confirm the selection.

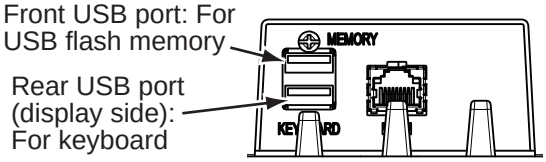
How to enable switching the mode from external equipment

Select the [Remote Control] tab in the [Dimmer] menu, then turn on [Display/Key]. Select [Apply] (**Enter**) to confirm the selection. (For the operation method, see section 2.6.)



2.1.5 How to insert a USB flash memory

There are two USB ports on the underside of the terminal unit. Insert a USB flash memory into the front USB port.

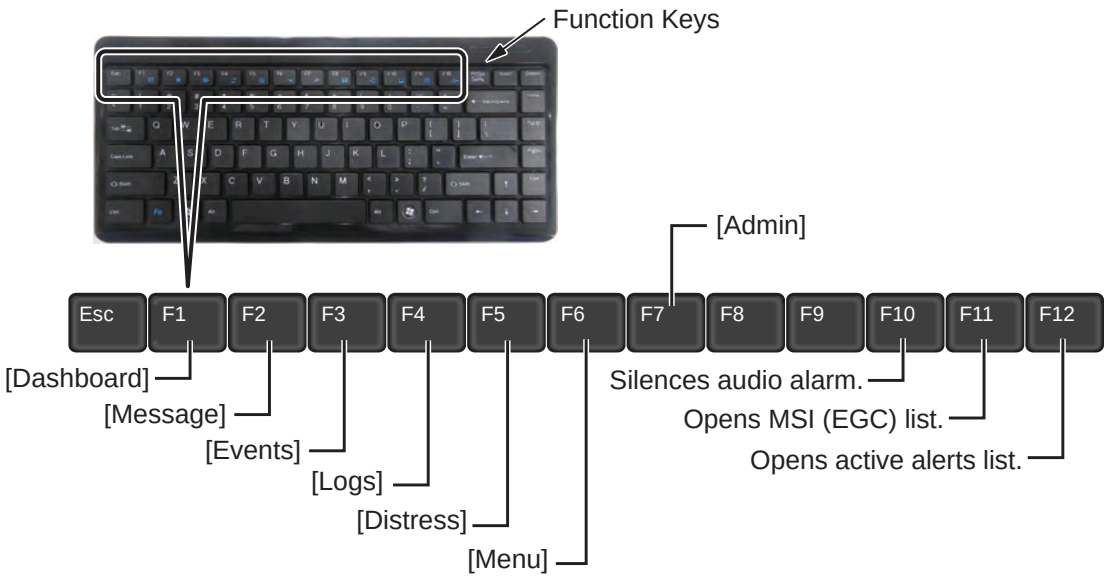


View from underside of the terminal unit

2.2 Keyboard

You can operate the FELCOM20 with the keyboard. The figure below shows the keyboard and the function of each function key, numbered F1 - F7, F10 - F12 at the top of the keyboard.

Note: Connect the cable for the keyboard to the rear USB port of the terminal unit (see subsection 2.1.5).



2.2.1 Key description

Key	Function
Esc	• Selects the [Cancel] button to cancel the setting or operation. • Selects the [Close] button to close the window.
F1 - **F8**	Selects sub menus. See subsection 2.2.2, subsection 2.5.1.
F9	No use.
F10	Silences the audio alert except for the start-up screen.
F11	Opens the MSI (EGC) list except for the start-up screen.
F12	Opens the active Alert list except for the start-up screen.
PrtScn/SysRq	No use.
Insert	No use.
Delete	• Selects the [Delete] button to delete the selected item. • Deletes the character to the right of the cursor.
Alphabet, symbol	Enter the appropriate alphabet or symbol.
Backspace	Deletes the character to the left of the cursor.
Home	Returns to the [Dashboard] screen except for dashboard or distress screen.
Tab	Moves the focus to the next item.
Caps Lock	Fixes and locks the keyboard to enter capital letters.
↑, **PgUp**	Scrolls the screen up when the scroll bar is displayed.
↓, **PgDn**	Scrolls the screen down when the scroll bar is displayed.
Enter	Selects the [Apply] or [OK] button to confirm the setting or continue an operation.
Shift + **Tab**	Moves the focus to the previous item.
End	No use.

Key	Function
Fn	No use.
Alt	Used in combination with certain alphabet keys.
Space bar	• Inserts a space. • Switches the selected item on/off. • Opens the options window of the selected box.
↑, ↓, ←, →	• Controls the cursor. • Changes the setting on the slider bar (↑/→: up, ↓/←: down).
Shift + ↑, ↓, ←, or →	Selects the range from the cursor position.
Ctrl + **C**	Copies the selection.
Ctrl + **X**	Cuts the selection.
Ctrl + **V**	Pastes the selection.
Ctrl + **Tab**, **Ctrl** + **PgDn**	Switches the active tab to the right.
Ctrl + **Shift** + **Tab**, **Ctrl** + **PgUp**	Switches the active tab to the left.

Note: In telex, lower case letters, #, &, *, $, @, %, etc. are not permitted. For a full list of characters usable in telex, see "International Telegraphy Alphabet" on page AP-22. For e-mail, all characters and symbols may be used.

2.2.2 Function keys

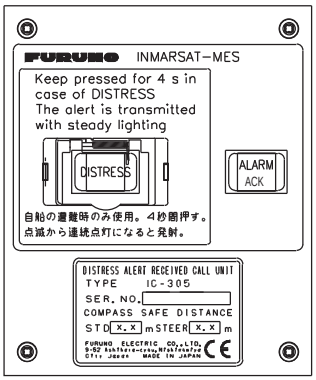
The function keys are labeled F1 - F12 on the keyboard and they provide the functions shown in the table below (For the side menu, see subsection 2.5.1).

Key	Function
F1	Shows the [Dashboard] screen. (Same as the [Dashboard] icon on the side menu.)
F2	Shows the message screen. (Same as the [Message] icon on the side menu.)
F3	Shows the [Active Notifications] screen. (Same as the [Events] icon on the side menu.)
F4	Shows the log screen. (Same as the [Logs] icon on the side menu.)
F5	Shows the [Distress Settings] screen. (Same as the [Distress] icon on the side menu.)
F6	Shows the [Menu] screen. (Same as the [Menu] icon on the side menu.)
F7	Shows the [Menu/Admin] screen. (Same as the [Admin] icon on the side menu.)
F8	Shows the service menu screen (for qualified technician).
F9	No use.
F10	Silences audio alarm.
F11	Opens the MSI (EGC) list.
F12	Opens the active Alert list.

2.3 Distress Alert/Received Call Unit IC-305, Alarm Unit IC-306

Distress Alert/Received Call Unit IC-305

The **DISTRESS** button functions to transmit the distress alert. To transmit the distress alert, press and hold the button (approx. 4 seconds) until its lamp lights continuously. For further details on how to transmit the distress alert, see section 6.1.



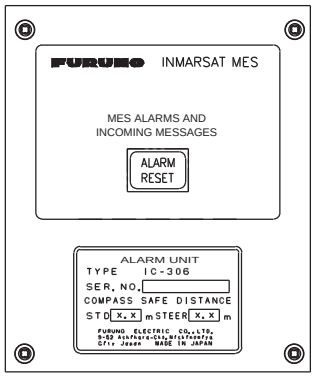
Distress Alert/Received Call Unit IC-305

The IC-305 releases the audio alarm and the lamp in the **ALARM ACK** button flashes when an EGC distress/urgency broadcast, or a distress acknowledgement is received. Press the **ALARM ACK** button to acknowledge the alarm, and the alarm tone changes. To silence the alarm and extinguish the lamp, press the **SILENCE** key on the terminal unit, the **F10** key on the keyboard, or select [Close] (**Esc**) on the pop-up message window.

Note: The IC-305 has different alarm pattern depending on the version, but in either case it works fine. When you use the old version of the IC-305 that is used in the FELCOM18, contact your dealer if you are worried about its operation.

Alarm Unit IC-306

The IC-306 releases the audio alarm and flashes the lamp in its **ALARM RESET** button when a telex or e-mail is received. To silence the audio alarm, press the **ALARM RESET** button on the IC-306. In addition to telex and e-mail notification, the audio alarm also sounds and the lamp flashes when an warning priority alert occurs (see "ALERT LIST" on page AP-23).



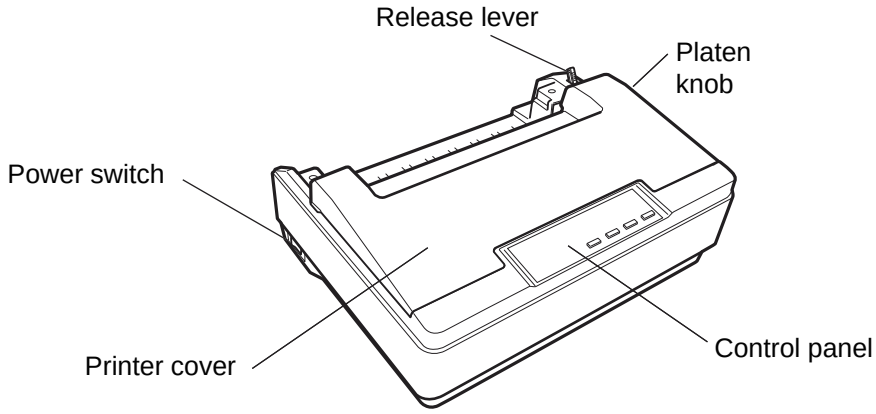
Alarm Unit IC-306

To acknowledge the audio alarm, press the **ALARM RESET** button, and the alarm stops. To silence the alarm and the flashing of the button in case of external equipment abnormality, press the **SILENCE** key on the terminal unit, or the **F10** key on the keyboard.

For Ship Security Alert System (SSAS) IC-307, see chapter 9.

2.4 Printer (Option)

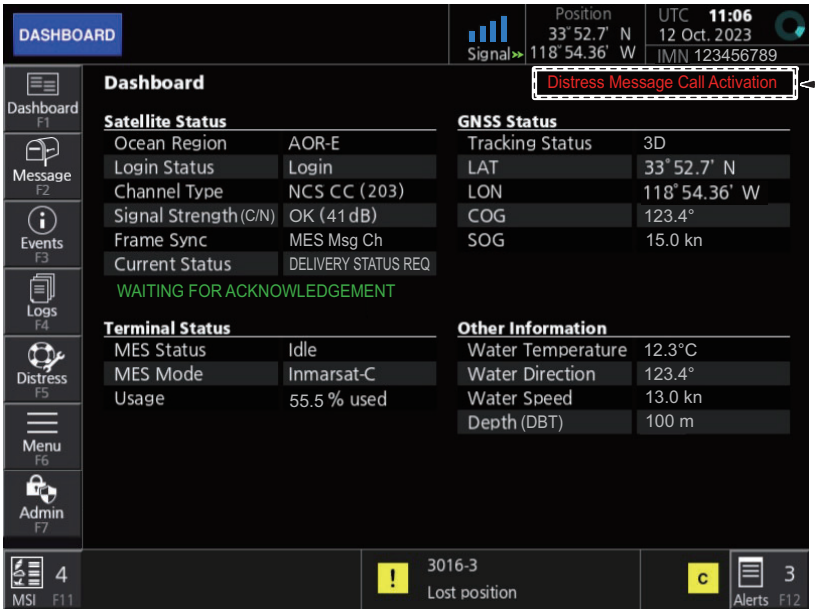
A printer (PP-520) can be connected to print transmitted and received messages. For the operating procedures, see the Operator's Manual of the PP-520 (OMC-50802).



Part	Description
Power switch	Turns the power on or off.
Printer cover	Open to replace the ink ribbon cartridge; clear a paper jam. Keep the cover closed otherwise.
Control panel	Controls the printer functions.
Platen knob	Ejects the paper manually. Clears a paper jam. **Note:** Do not touch in the Online mode.
Release lever	Releases paper to straighten or remove it.

2.5 Dashboard Screen

After the equipment is turned on and the diagnostic test is completed, the [Dashboard] screen appears. This screen provides various operating information.



After the diagnostic test is completed, the equipment automatically starts synchronizing itself with a satellite. When the indication [Retuning] is replaced with [SYNC (NCS)] in [Frame Sync], the synchronization process is completed. Then, you are ready to receive EGC messages. See section 3.3.

Note: When the caution "Pre-set LES ID for DISTRESS ALERT is invalid in this ocean." appears, change the LES ID in the distress alert setup to match current ocean region. See section 6.2.

Distress alert information message

No display: No distress alert.
"Distress Message Call Activation": Sending distress priority message.
"Distress Message Call Acknowledge": Acknowledgement for distress priority message received from LES.

[Satellite Status]

- **[Ocean Region]**: Shows the ocean region currently being receiving.
  [AOR-W]: Atlantic Ocean Region-West
  [AOR-E]: Atlantic Ocean Region-East
  [POR]: Pacific Ocean Region
  [IOR]: Indian Ocean Region
- **[Login Status]**: Shows the login status.
  [Login]: Logged in with ocean region.
  [Logout]: Logged out with ocean region.
- **[Channel Type]**: Shows the channel currently in use and the LES ID (XXX).
  [UNSYNC (XXX)]: Out of synchronization.
  [NCS CC (XXX)]: NCS common channel.
  [LES TDM (XXX)]: LES TDM channel.
  [Joint (XXX)]: LES TDM channel on behalf of NCS common channel.
  [Standby NCS CC (XXX)]: Standby NCS common channel.

- **[Signal Strength]**: Check of circuit status with LES, receiving circuit in antenna unit and TERMCPU Board in terminal unit. [OK] appears for figure greater than 31.
- **[Frame Sync]**: Shows the frame synchronization.
  [SYNC (NCS)]: Synchronizing with NCS.
  [SYNC (LES)]: Synchronizing with LES.
  [MES Sig Ch]: Changing MES signaling channel.
  [MES Msg Ch]: Changing MES message channel.
  [UNSYNC]: Out of synchronization.
  [Retuning]: Synchronizing with NCS or LES.
- **[Current Status]**: Shows the terminal unit status.
  [IDLE]: Idle (awaiting receiving/transmitting).
  [IDLE (PENDING)]: Awaiting reply from LES.
  [SENDING]: Sending.
  [RECEIVING]: Receiving.
  [LOGIN]: Logging in with NCS.
  [LOGOUT]: Logging out with NCS.
  [DISTRESS ALERT]: Transmitting the distress alert.
  [DATA REPORT]: Sending data report.
  [SCANNING]: NCS scanning.
  [EGC RECEIVER]: Receiving EGC.
  [DELIVERY STATUS REQ]: Transmitting delivery status request.
  [FORCED CLEARING]: Stopping receiving, transmitting, or scanning.
  Shows the network status for the Inmarsat C on the second line.
  [CALLING]: Now calling.
  [WAITING FOR ACKNOWLEDGEMENT]: Waiting for acknowledgement from LES.
  [RECEIVING EGC MESSAGE]: Now receiving EGC message.
  [WAITING FOR BACKOFF]: Waiting to transmit data report.
  [Successful Login]: Login was successful.
  [Successful Logout]: Logout was successful.
  [Login Failed]: Login failed.

GNSS Status

- **[Tracking Status]**: Shows the current satellite tracking status.
- **[LAT]**, **[LON]**: Shows own ship's position in latitude and longitude.
- **[COG]**: Shows own ship's course. ("- - -.-" is displayed when there is no input.)
- **[SOG]**: Shows own ship's speed. ("- -.-" is displayed when there is no input.)

Terminal Status

- **[MES Status]**: Shows the operational status of MES (Idle/Busy/Busy (Distress)).
- **[MES Mode]**: Shows the operational mode of MES (Inmarsat C/EGC RECEIVER).
- **[Usage]**: Shows the internal storage usage percentage.

Other Information

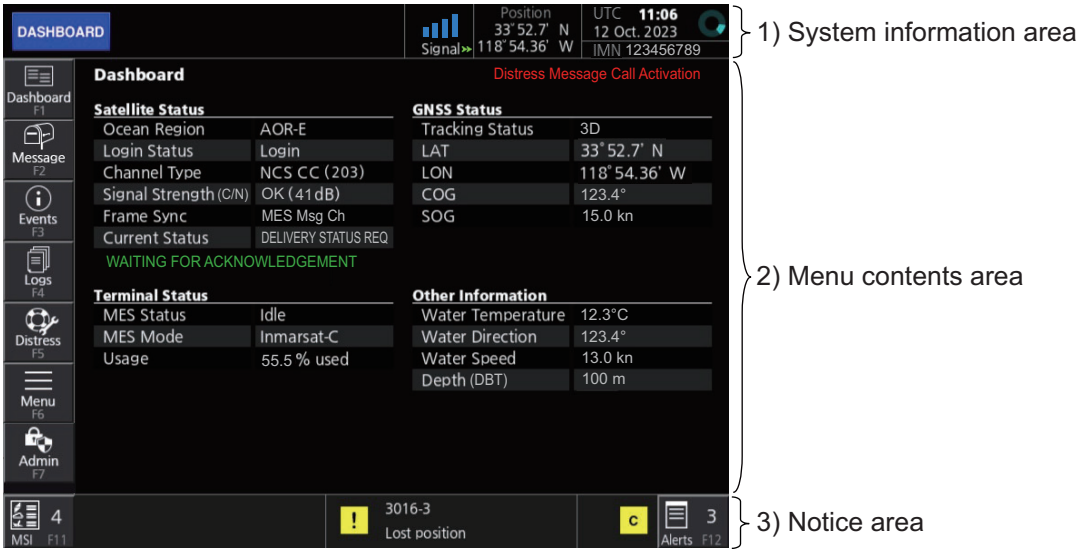
Requires data from appropriate sensor.

- **[Water Temperature]**: Shows the water temperature. ("- - -.- °C" is displayed when there is no input.)
- **[Water Direction]**: Shows the tidal current direction. ("- - -.- °" is displayed when there is no input.)

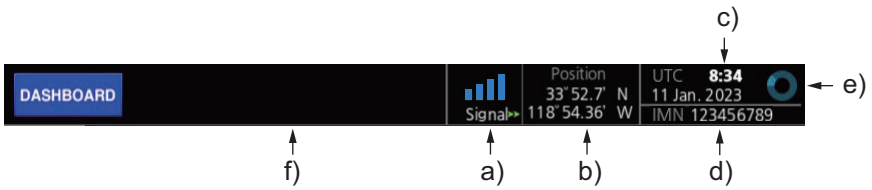
- **[Water Speed]**: Shows the tidal current speed. ("- -.- kn" is displayed when there is no input.)
- **[Depth (DBT)]**: Shows the water depth below the transducer. ("- - - - -.-" is displayed when there is no input.)

2.5.1 Display indications

The display is divided in three areas:



1) System information area



a) Shows the signal strength. The icon appears while transmitting.

b) Shows the own ship's position in latitude and longitude.

c) Shows the date & time in UTC.

d) Shows the IMN (Inmarsat Mobile Number of own vessel). When the IMN is not set, "- - - - - - - - -" is displayed.

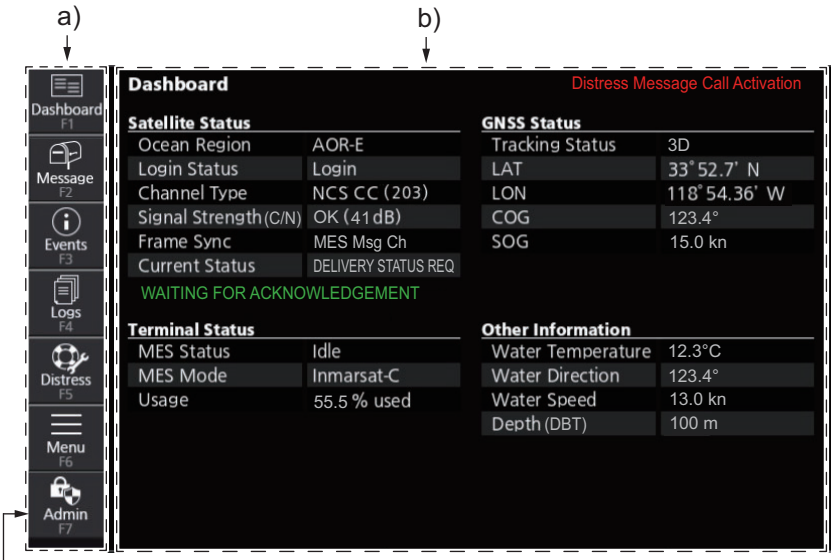
e) The spinner icon rotates when the equipment is functioning normally.

f) Shows the communication network mode.

- **No display**: Normal operation.
- [**Restoration Mode (Network Update Received)**][*1]: Previously designated LES is transmitting the NCS common channel signal.
- [**LRIT Conformance Test Mode**][*2]: LRIT test mode operation (see subsection 5.6.3).

Note: Both *1 and *2 are displayed in restoration and LRIT test modes.

2) Menu contents area



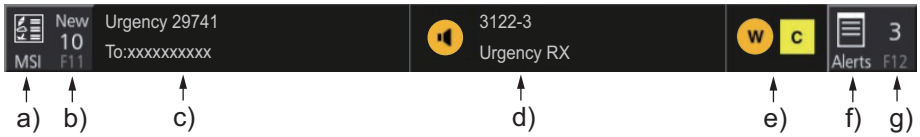
Note: When signing in to [Admin] menu, this icon appears.

a) Side menu

Item	Operation	Description
[Dashboard]	Tap/**F1** key	Shows the [Dashboard] screen.
[Message]	Tap/**F2** key	Shows the message screen. If there are unread messages, the number for them is displayed.
[Events]	Tap/**F3** key	Shows the [Active Notifications] screen.
[Logs]	Tap/**F4** key	Shows the log screen.
[Distress]	Tap/**F5** key	Shows the [Distress Settings] screen.
[Menu]	Tap/**F6** key	Shows the (general) [Menu] screen.
[Admin]	Tap/**F7** key	Shows the [Menu/Admin] screen (sing in required).

b) Menu contents: The contents change according to the item selected in side menu.

3) Notice area



a) Tap or press the **F11** key to open the MSI (EGC) list.

b) Shows the number of the unread MSI (EGC) messages.

c) Shows the priority and sequence number (unique number assigned by the message sending system) for the unread MSI (EGC) message.

- When multiple messages occur, the message with the highest priority* is displayed.
  *: Distress > Urgent > Safety
- When the priority for multiple messages is the same, the latest message is displayed.
- When there are no unread MSI (EGC) messages, this area is blank.
- For the message other than distress, urgency, or safety, only the message sequence number is displayed.

d) Shows the active BAM ID and the alert message.
- When multiple messages occur, the message with the highest priority* is displayed.
  *: Warning > Caution
- When the priority for multiple messages is the same, the latest message is displayed.
- When there are no BAM alerts, "No Alerts" is displayed.

e) Shows the icons for active BAM alerts by priority. When an alert which is not displayed in the c) or d) area occurs, its icon flashes.

f) Tap or press the **F12** key to open the active BAM alerts list.

g) Shows the number of active BAM alerts.

2.6 Menu Overview

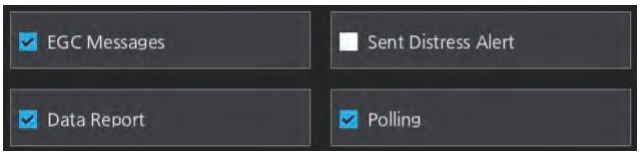
You can operate the FELCOM20 by touch operation or using the keyboard.
See "Standards used in this manual" on page ix for the description in this manual.

1. Tap 

([Menu]), or press the **F6** key to open the [Menu] screen.



2. Tap an icon. For the keyboard, press the ↑, ↓, ←, →**, Tab,** or press the **Tab** key while pressing and holding the **Shift** key to select an icon, then press the **Enter** key.
3. Do one of the following according to the menu item.
   - **Check box**



Touch operation: Tap an option to switch between on (✓) and off.
Keyboard operation: Press the **Tab** key to select an option, then press the space bar to switch between on (✓) and off.

- **Radio button**



Touch operation: Tap an option to select it.
Keyboard operation: Press the ↑, ↓, ←, or → key to select an option.

- **Slide button**



ON OFF

Touch operation: Tap the button to turn on or off.
Keyboard operation: Press the space bar to switch between on and off.

- **Slider bar**



Touch operation: Drag the slider thumb to adjust the setting.
Keyboard operation: Press the ↑, ↓, ←, or → key to adjust the setting.

- **Drop-down list**



Touch operation: Tap ▼ to open the options window.
Keyboard operation: Press the space bar to open the options window.

- **Operation button**



Touch operation: Tap button to start the selected operation.
Keyboard operation: Press the key labeled on the bottom of the button to start the selected operation. For example, press the **Enter** key to apply the selection or setting.

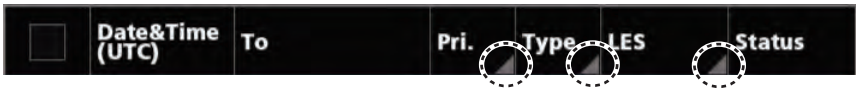
- **Alphabet, numerical data entry**



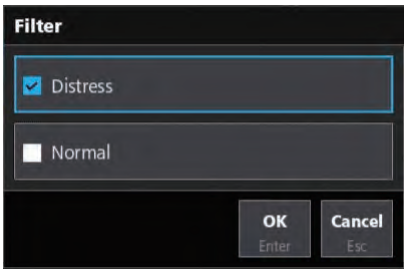
Keyboard/touch operation: Press the appropriate (alphabet, numeric, or symbol) key to enter data, then tap [Apply] (or press the **Enter** key) to confirm.

- **Backspace** key: Deletes the character to the left of the cursor.
- **Delete** key: Deletes the character to the right of the cursor.
- **Shift** + ←, ↑, →, ↓ key: Selects the range from the cursor.
- **Ctrl** + **C** key: Copies the characters selected.
- **Ctrl** + **X** key: Cuts the characters selected.
- **Ctrl** + **V** key: Pastes the characters copied or cut.

- **Filter**



The item with ◢ mark has the filter function.
Touch operation: Tap an item to open the filter window as shown in the figure below. Tap an option to switch between on (✓) and off, then tap [OK].
Keyboard operation: Press the **Tab** key to select an item, then press the space bar to open the filter window as shown in the figure below. Press the **Tab** key to select an option, then press the space bar to switch between on (✓) and off. Press the **Enter** key.

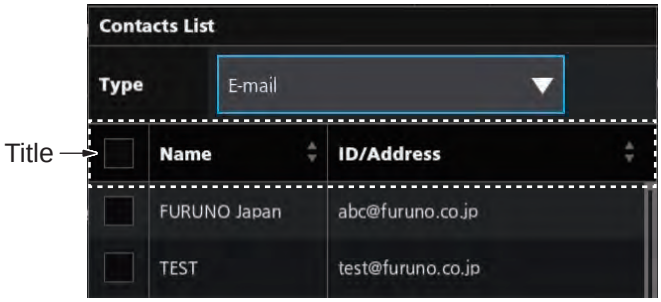


- **Tab switching**



Touch operation: Tap the item to switch the active tab.
Keyboard operation: Press the **Tab** or **Page Down** key while pressing and holding the **Ctrl** key to switch the active tab to the right. Press the **Shift** and **Tab**, or **Page Up** key while pressing and holding the **Ctrl** key to switch the active tab to the left.

- **Selecting all**



Touch operation: Tap the check box of the title to switch between selecting all (✓) and deselecting all.
Keyboard operation: Press the **Tab** key to select the check box of the title, then press the space bar to switch between selecting all (✓) and deselecting all.

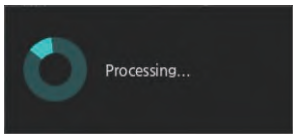
- **Sort**



The item with ▲▼ mark has the sort function.
Touch operation: Tap an item to switch sort order, in the following sequence.
Keyboard operation: Press the **Tab** key to select an item, then press the space bar to switch sort order, in the following sequence.

Ascending order (△▼) → Descending order (▲▽) → Unsort (▲▼)

Note: The message "Processing..." appears while a process is being done. The message disappears once the process is completed.



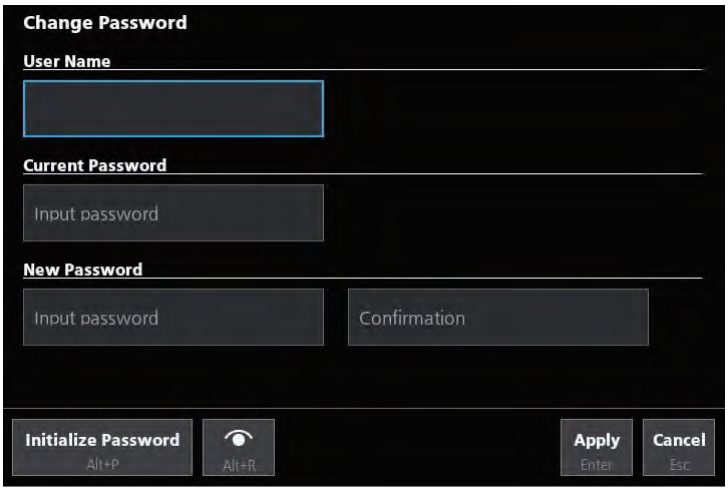
2.7 Password

A password is required to open the Admin (see section 2.8) and SSAS (see chapter 9) menus. No initial password is set. To prevent unauthorized access to specific menus, set a password by the device administrator (captain, etc.) before using this equipment.

Note: The password for the SSAS administrator is set by a service technician. See the Adjustment Manual (AME-55810).

2.7.1 How to set a password

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Password] to open the [Change Password] screen.



3. Select [User Name], then enter the user name ("Admin").
4. Select [Input password] of [New Password], then enter the password to be set.

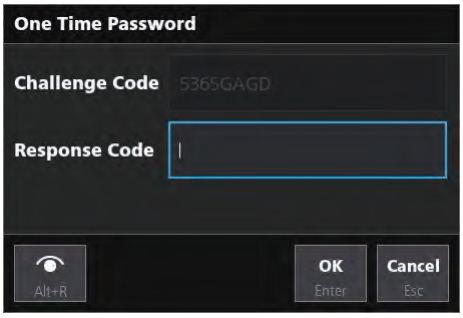
   Note: If you want to visualize the input values, select  (**Alt** + **R**).
5. Select [Confirmation] of [New Password], then enter the password to be set again.
6. Select [Apply] (**Enter**) to confirm the setting.

2.7.2 How to change the password

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Password] to open the [Change Password] screen.
3. Select [User Name], then enter the user name ("Admin").
4. Select [Current Password], then enter the current password.
5. Select [Input password] of [New Password], then enter the new password.
6. Select [Confirmation] of [New Password], then enter the new password again.
7. Select [Apply] (**Enter**) to confirm the setting.

2.7.3 How to initialize the password

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Password] to open the [Change Password] screen.
3. Select [User Name], then enter the user name ("Admin")
4. Select [Initialize Password] (**Alt** + **P**) to open the [One Time Password] window.



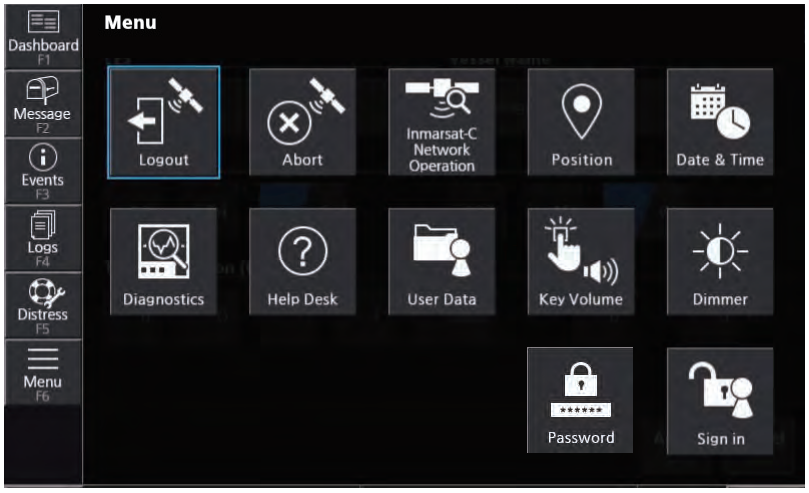
5. Contact your dealer to give the eight-digit challenge code and get a response code.
   Note: The validity period of the challenge code is 12 hours.
6. Select the [Response Code], then enter the response code.
7. Select [OK] (**Enter**) to initialize the password.

2.8 Admin Menu

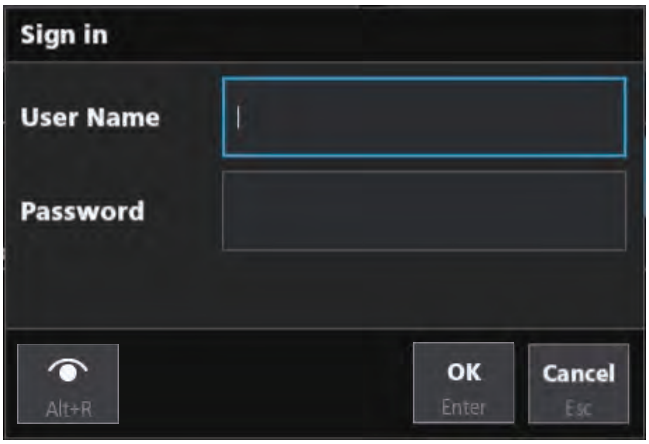
Some functions are carried out from the [Admin] menu, which you need to sign in to access. Do as follows to access this menu.

Note: Be sure to set a password by the device administrator (captain, etc.) before using this equipment (see subsection 2.7.1).

1. Select [Menu] (**F6**) to open the [Menu] screen.



2. Select [Sign in] to open the [Sign in] window.



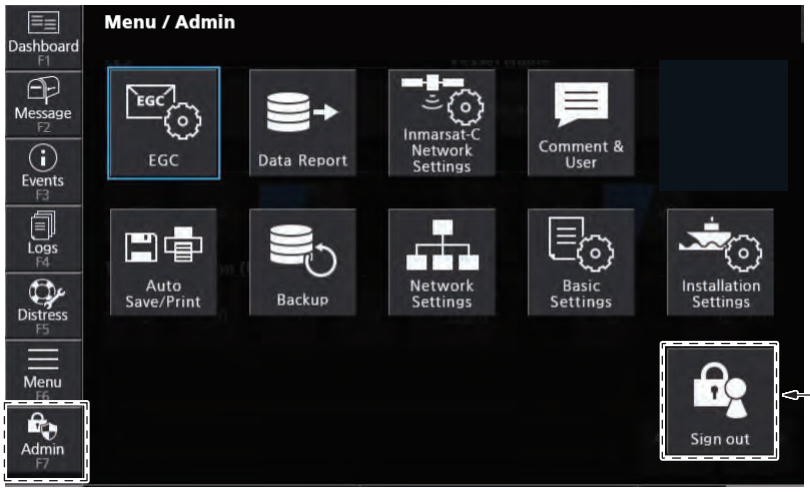
3. Enter the user name ("Admin") and password, then select [OK] (**Enter**).
   Note 1: If you forget the password, see subsection 2.7.3 to initialize the password, and then immediately set a new password.

   Note 2: If you want to visualize the input values, select  (**Alt** + **R**).

   Note 3: If there is no operation for a specified time after signing in (default: 15 minutes), the system will automatically sign out from the [Admin] menu.

   Note 4: If you cannot set sign in to the [Admin] menu, contact your dealer.

4. Select [Admin] (**F7**) to open the [Menu/Admin] screen in the administrator mode.

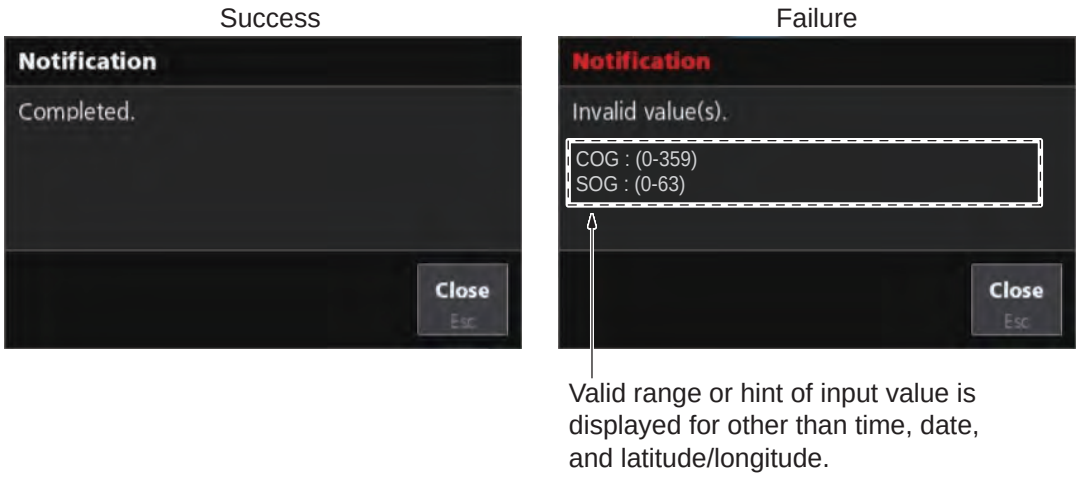


   Note: When you fail to sign in, the message "Invalid User Name/Password" appears in orange. Enter the correct user name and password. If you fail to sign in consecutively, the message "Too many attempts failed." appears. In this case, sign in again after 30 minutes, or restart this equipment and sign in.

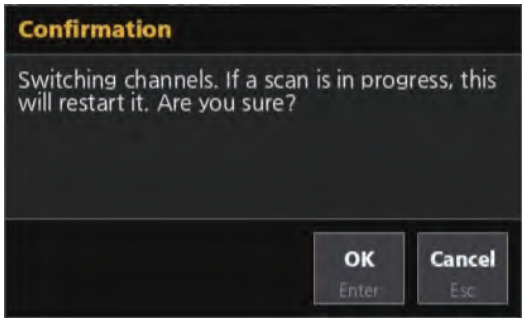
2.9 Pop-up Messages

There are four type of pop-up messages: notification, confirmation, information, and message received. For message contents of notification, confirmation and information, see subsection 8.8.3 and "MESSAGES" on page AP-4.

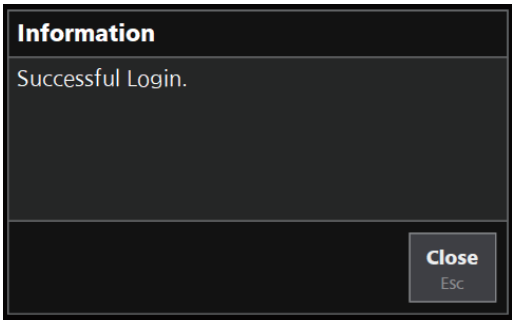
- [**Notification**]: Notifies completion of setting. When the setting is successfully completed, the [Notification] window is automatically closed after three seconds. When the setting fails, close the [Notification] window by one of the following operations.
  Touch operation: Tap [Close].
  Keyboard operation: Press the **Esc** key.



- [**Confirmation**]: Confirms continuation of operation or processing.
  Touch operation: Tap [OK] to continue the operation or processing, or [Cancel] to cancel the operation or processing.
  Keyboard operation: Press the **Enter** key to continue the operation or processing, or the **Esc** key to cancel the operation or processing.



- [**Information**]: Displays the messages without operation by user (e.g. error message). To close the information window, do one of the following operations.
  Touch operation: Tap [Close].
  Keyboard operation: Press the **Esc** key.



- **Message received**: Notifies receiving the distress priority message, distress priority EGC, or urgency EGC. To acknowledge the alert message, silence the audio alarm, and close the window, do one of the following operations.
  Touch operation: Tap [ACK].
  Keyboard operation: Press the **Enter** key.



Example: Distress priority EGC

Message type (title)	Message
Distress Priority Message received	Distress Priority Message received. Check the Received Message Window.
Distress EGC received	Distress Priority EGC Message received. Check the MSI Message Window.
Urgency EGC received	Urgency Priority EGC Message received. Check the MSI Message Window.

Note 1: If you receive a message of the same type while the pop-up message for the message received is displayed, the new pop-up message does not appear. The display priority is Distress Priority Message, Distress EGC, Urgency EGC in that order.

Note 2: Press the **F10** key or the **SILENCE** key to silence the audio alarm for 30 seconds.

Note 3: Selecting [ACK] (**Enter**) on the pop-up message window changes the alert status of the Alert list (see subsection 8.8.2).

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3. SYSTEM INITIALIZATION

This chapter shows you how to initialize the FELCOM20 system. Once the equipment is initialized, you need do no more than press a few keys to get fully automatic transmission and reception.

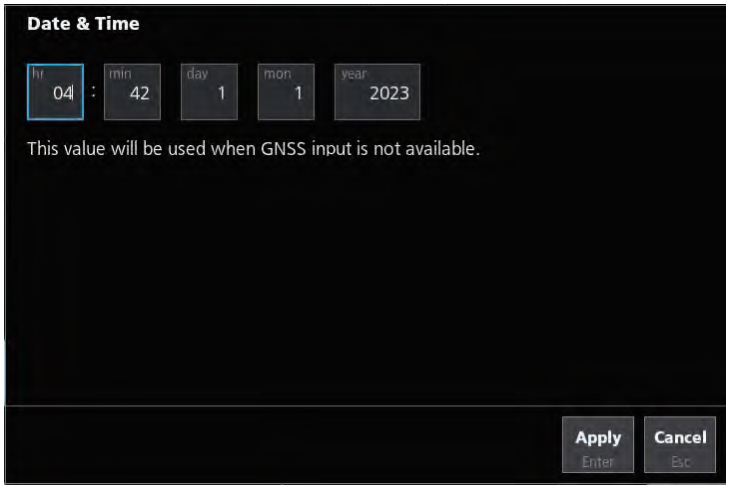
Inmarsat assigns an Inmarsat Mobile Number (IMN) to an MES (your ship) when it applies for Inmarsat registration. The IMN is necessary to communicate in the Inmarsat system and it is entered into the FELCOM20 system during the installation.

3.1 System Settings

3.1.1 How to set the date & time

Note: Entry of date & time is not necessary if a GPS navigator is built in or an external navigator is connected to the FELCOM20.

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Date & Time] to open the [Date & Time] screen.

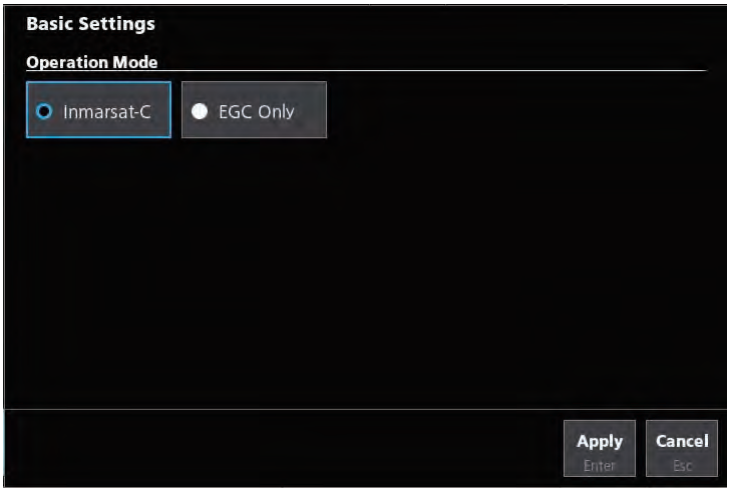


3. Select [Date & Time], then enter the time and date (hour, minute, day, month, year).
4. Select [Apply] (**Enter**) to confirm the selection.

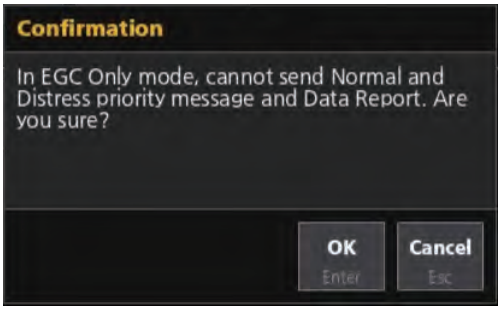
3.1.2 How to set the operating mode

Note: The [Basic Settings] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Basic Settings].



3. Select the operating mode in [Operation Mode].
   [Inmarsat-C]: Provides telex communications and operates as an EGC receiver when the equipment is not transmitting or receiving.
   [EGC Only]: Enables EGC-only operation. In this case, "Current Status: EGC RECEIVER" appears on the [Dashboard] screen.
4. Select [Apply] (**Enter**) to confirm the selection.
   Note: When selecting [EGC Only] at step 3, the confirmation message as shown in the figure below appears. To continue, select [OK] (**Enter**). If you select [Cancel] (**Esc**) instead of [Apply] (**Enter**) on the [Basic Settings] screen, the [Operation Mode] is set to [Inmarsat-C].

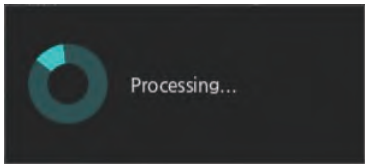


3.2 Login and Logout

Each time the terminal unit is turned on, login your vessel with the Inmarsat C system to enable communications between your vessel and an LES. This is called login. Note that you can transmit the distress alert or receive EGC messages even if you are not logged in. If you will not be using the FELCOM20 for a prolonged period, you should logout from the Inmarsat C system, before turning off the terminal unit. The Inmarsat C system will then register you as inactive, notifying anyone trying to call you that you are currently unavailable. If you do not log out before turning off the power, some LESs may attempt to send a message to you. They may charge your correspondent, even if you don't receive the message.

3.2.1 Login

1. Confirm that [SYNC (NCS)] appears in [Frame Sync] on the [Dashboard] screen.
2. Select [Menu] (**F6**) to open the [Menu] screen.
3. Select [Login]. The confirmation message "Login process starting. Are you sure?" appears.
4. Select [OK] (**Enter**). The processing icon (shown in the figure below) appears for approx. three seconds, then the [Dashboard] screen appears. [LOGIN] appears in [Current Status].



When login is completed, the [Current Status] indication changes from [LOGIN] to [IDLE], and [Successful Login] appears below the [Current Status]. Also, [Login] appears in [Login Status].

Note: The terminal unit must be "idle" to login. ([IDLE] appears in [Current Status].) When it is not idle, "Ignored: MES is not idle." appears. Select [Dashboard] (**F1**) to return to the [Dashboard] screen. Wait until the terminal unit becomes idle.

3.2.2 Logout

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Logout]. The confirmation message "Logout process starting. Are you sure?" appears.
3. Select [OK] (**Enter**). The processing icon appears for approx. three seconds, then the [Dashboard] screen appears. The [Current Status] indication changes from [LOGIN] to [LOGOUT].
   When logout is completed, the [Current Status] indication changes from [LOGOUT] to [IDLE], and [Successful Logout] appears below the [Current Status]. Also, [Logout] appears in [Login Status].
4. Turn off the FELCOM20.

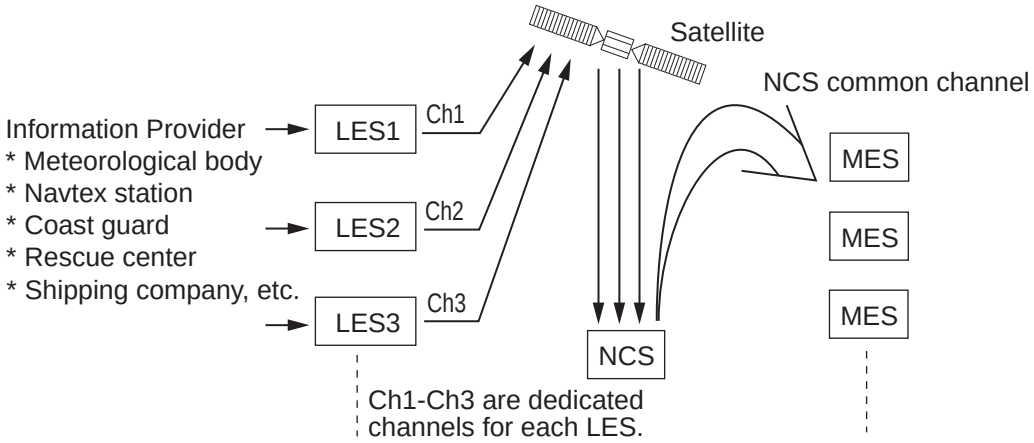
3.3 EGC Settings

3.3.1 What is the EGC (Enhanced Group Call) service?

The EGC service enables EGC information providers to send SafetyNET™, FleetNET™ and System messages via an LES to a specific groups of ships, or to all ships within a defined geographical area.

Each type of EGC service is sent as follows:

1) The information provider prepares the message, and then accesses the appropriate country of the international telex network to send the message to an LES.
2) The LES processes and forwards it to the NCS for the ocean region designated by the provider.
3) Then, the NCS broadcasts the message throughout the ocean region. (The operator may select the EGC messages to receive by position (one position) and geographical position (nine areas). For further details see section 3.3.2.



There are three types of EGC services:

- SafetyNET™
  This provides a means for information providers to distribute Maritime Safety Information (MSI) from shore-to-ship. Authorized information providers include:
  - Hydrographic Offices, for navigational warnings
  - National Weather Services, for meteorological warnings and forecasts
  - Rescue Co-ordination Center, for shore-to-ship distress alerts and other urgency information
  - International Ice Patrol, for North Atlantic ice hazards

- FleetNET™
  This service allows authorized information providers such as commercial subscription services, shipping companies and governments, which have registered with a LES that supports FleetNET™, to broadcast messages to the selected group of MESs. Typical applications of FleetNET™ are
  - Fleet or company broadcasts
  - News broadcasts
  - Commercial weather service
  - Government broadcasts to all vessels on a country's registration

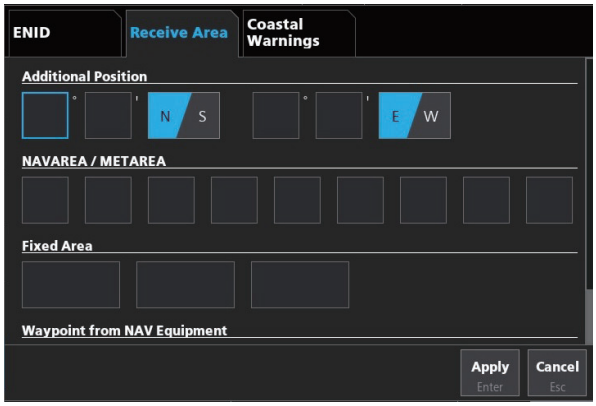
- System: EGC system-related message is sent by Inmarsat to certain ship groups and geographical areas.

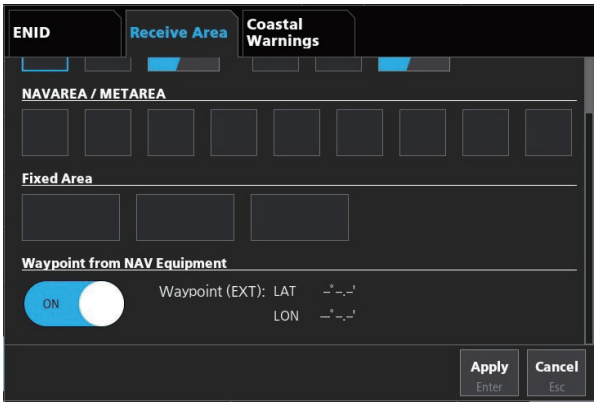
3.3.2 EGC settings

The FELCOM20 receives EGC messages directed to its present position and Navarea without further programming. The [EGC Settings] menu lets you select additional areas for which to receive messages and also the Navtex station and type of message for Coastal Warning (NAVTEX Re-broadcast).

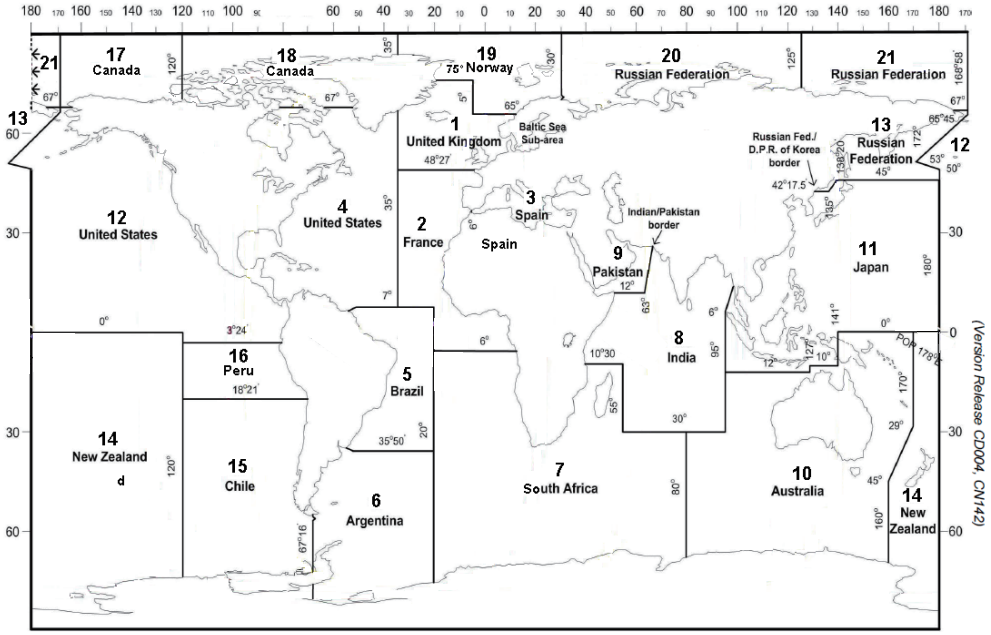
Note: The [EGC Settings] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [EGC].
3. Select the [Receive Area] tab.





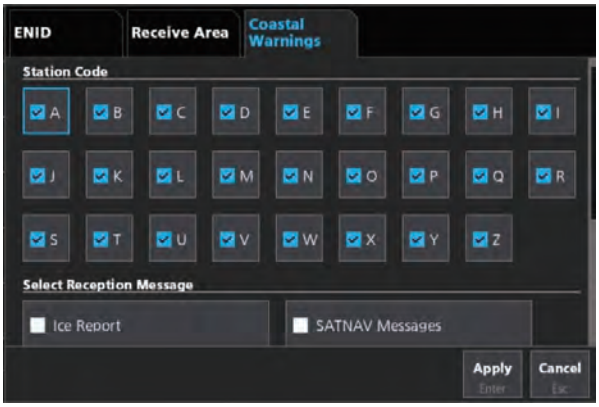
4. Select [Additional Position], then enter the L/L position of an ocean region you want to receive broadcasts about. Select [N] or [S] for latitude, [E] or [W] for longitude.
5. Select [NAVAREA/METAREA], then enter additional Navarea(s) (1 to 21, max. of nine) referring to the illustration below for code number.



Note: [Fixed Area] is where you enter fixed areas (max. 3) for chart correction service. However, this service is not yet available; enter no data.

6. Turn on [Waypoint from NAV Equipment] to receive broadcasts for the area which contains the destination waypoint set on the navigator.
7. Select [Apply] (**Enter**) to confirm the selection.

8. Select the [Coastal Warnings] tab.





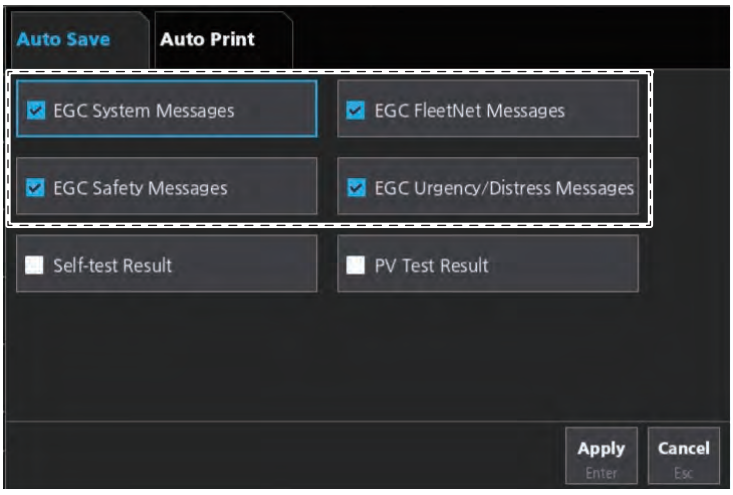
9. Turn on (✓) the receiving Navtex station code (A-Z) of the navarea in [Station Code]. For details about Navtex stations, consult the manual of the Navtex receiver.
10. Turn on (✓) the message type to receive in [Select Reception Message].
    Note: The Navtex messages “Coastal navigational information”, “Meteorological warning” and “Search and rescue alert” (they do not appear on [Select Reception Message]) must always be received.
11. Select [Apply] (**Enter**) to confirm the selection.

3.3.3 How to automatically save and print EGC messages

Note: The [Auto Save/Print] menu requires administrator access rights.

How to automatically save EGC messages

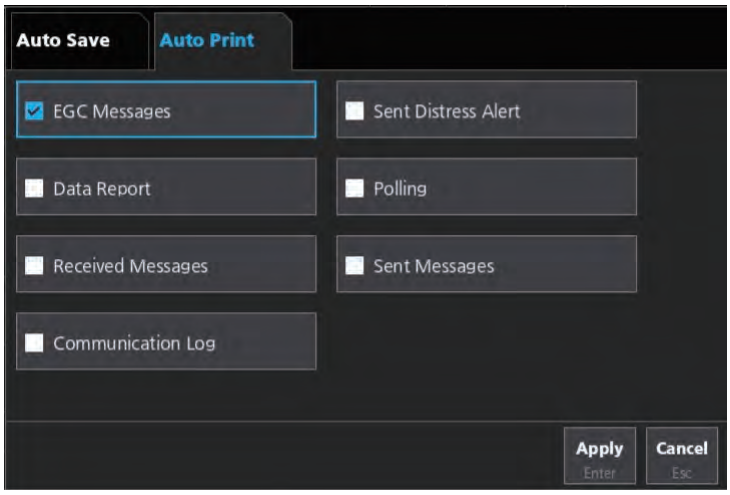
1. Open the [Admin] menu referring to section 2.8.
2. Select [Auto Save/Print].
3. Select the [Auto Save] tab.



4. Turn on (✓) the message(s) to save automatically.
5. Select [Apply] (**Enter**) to confirm the selection.

How to automatically print EGC messages

1. Open the [Admin] menu referring to section 2.8.
2. Select [Auto Save/Print].
3. Select the [Auto Print] tab.



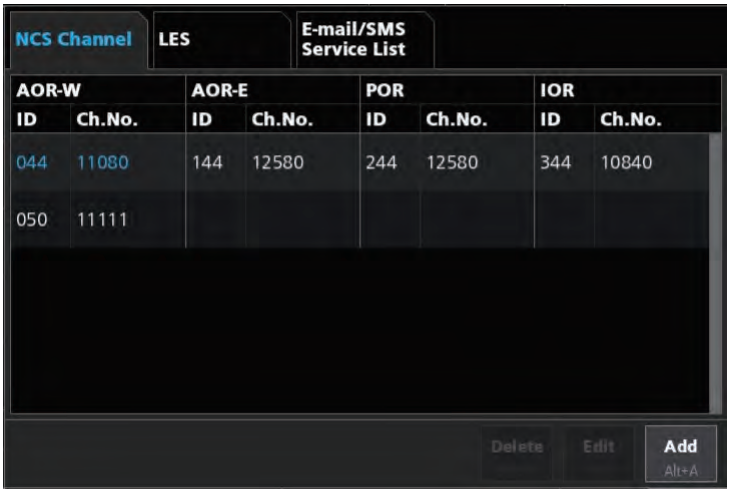
4. Turn on (✓) [EGC Messages] to print the EGC messages automatically.
5. Select [Apply] (**Enter**) to confirm the selection.

3.4 How to Add NCS Channels

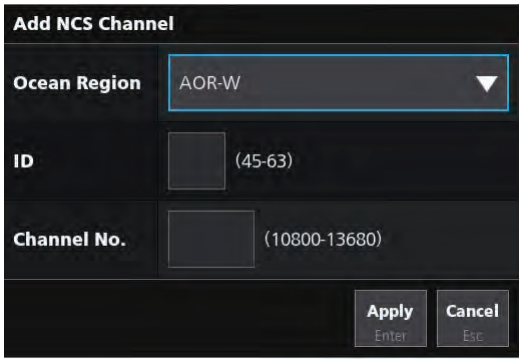
This section shows you how to add NCS channels to the NCS channel list. 19 channels can be listed per each ocean region. Currently, there are four NCS channels, and they are pre-programmed into the unit. Add NCS channels to the list as below when they become operational.

Note: The [NCS Channels] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Inmarsat-C Network Settings].
3. Select the [NCS Channel] tab.



4. Select [Add] (**Alt** + **A**) to open the [Add NCS Channel] window.



Note: If the maximum number of the channel registrations has been reached in each ocean region, the message "The list is full." appears when selecting [Add] (**Alt** + **A**). Delete unnecessary channel to make space referring to "How to delete NCS channels" on page 3-8.

5. Select [Ocean Region] to open the [Ocean Region] window.
6. Select [AOR-W], [AOR-E], [POR], or [IOR], then select [OK] (**Enter**).
7. Select [ID], then enter the NCS channel ID number (setting range: 45 - 63).
   Note: If the NCS channel ID number entered is invalid, the notification message "Invalid value(s)." appears. Select [Close] (**Esc**) to clear the message, then enter the correct ID.
8. Select [Channel No.], then enter the NCS channel frequency code (setting range: 10800 - 13680).
   Note: If the NCS channel frequency code entered is invalid, the notification message "Invalid value(s)." appears. Select [Close] (**Esc**) to clear the message, then enter the correct frequency code.
9. Select [Apply] (**Enter**) to confirm the selection.

How to edit NCS channels

To edit an NCS channel, select it, then select [Edit] (**Alt** + **E**) on the [NCS Channel] tab to open the [Edit NCS Channel] window. Edit appropriate items referring to steps 5 to 9 above.

How to delete NCS channels

To delete an NCS channel, select it, then select [Delete] (**Delete**) on the [NCS Channel] tab. The confirmation message "Delete the selected item(s). Are you sure?" appears. Select [OK] (**Enter**).

3.5 LES List

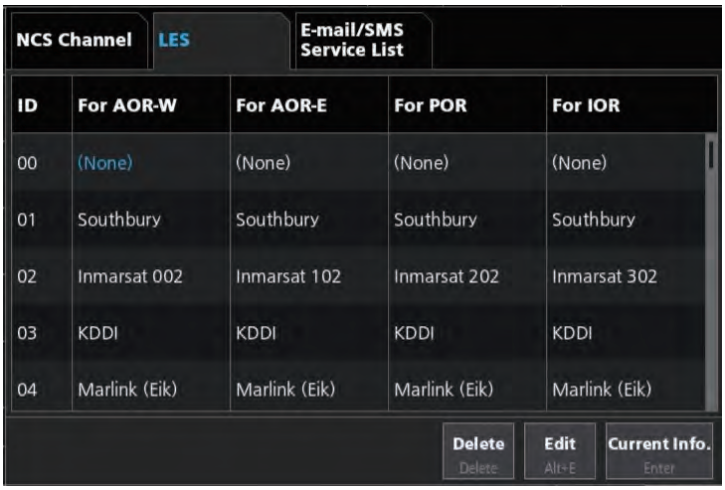
The LES list provides for storage of 44 LES names per ocean region.

3.5.1 How to register/edit an LES to the LES list

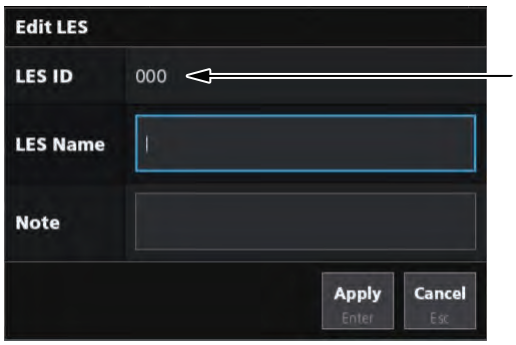
Note: The [LES] menu requires administrator access rights.

When a new LES is established, add it to the LES list as shown below. See "LES List" on page AP-20.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Inmarsat-C Network Settings].
3. Select the [LES] tab.



4. Select the LES to register (displayed [None]) or edit, then select [Edit] (**Alt** + **E**) to open the [Edit LES] window.



Example: 101
①②
①: Shows ocean region.
- AORW: 0
- AORE: 1
- POR: 2
- IOR: 3

②: Shows ID number selected in the setting window.

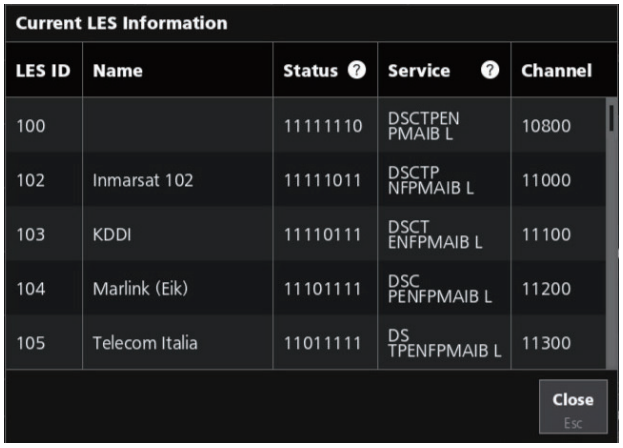
5. Select [LES Name], then enter the LES name.
6. Select [Note], then enter the note.
7. Select [Apply] (**Enter**) to confirm the selection.

3.5.2 How to delete an LES

To delete an LES, select it, then select [Delete] (**Delete**) on the [LES] tab. The confirmation message "Delete the selected item(s). Are you sure?" appears. Select [OK] (**Enter**).

3.5.3 How to display LES information

Select [Current Info.] (**Enter**) on the [LES] tab to display the information for the LESs currently available.

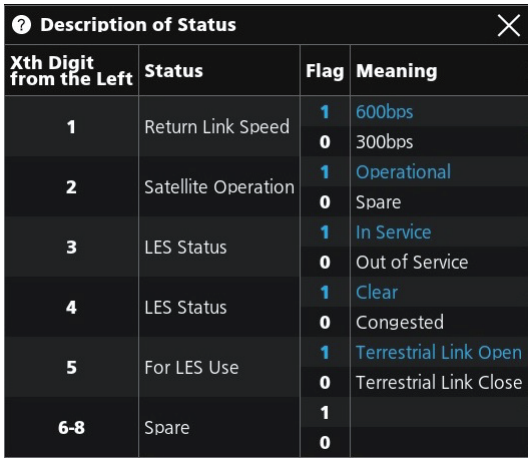


Current LES Information

LES ID	Name	Status	Service	Channel
100		11111110	DSCTPEN PMAIB L	10800
102	Inmarsat 102	11111011	DSCTP NFPMAIB L	11000
103	KDDI	11110111	DSCT ENFPMAIB L	11100
104	Marlink (Eik)	11101111	DSC PENFPMAIB L	11200
105	Telecom Italia	11011111	DS TPENFPMAIB L	11300

Close Esc

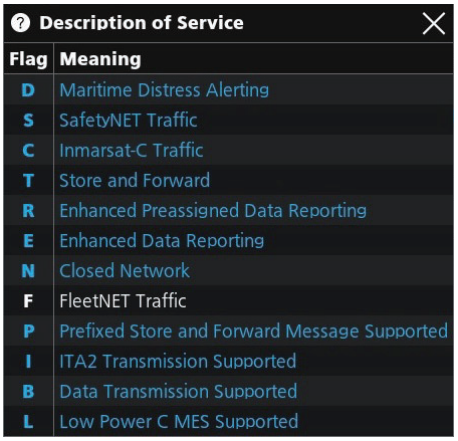
The question mark (?) to the right of [Status] and [Service] indicates additional information is available. Tap the mark (space bar) to show the [Description of Status] (or [Description of Service]) window.



Description of Status

Xth Digit from the Left	Status	Flag	Meaning
1	Return Link Speed	1	600bps
		0	300bps
2	Satellite Operation	1	Operational
		0	Spare
3	LES Status	1	In Service
		0	Out of Service
4	LES Status	1	Clear
		0	Congested
5	For LES Use	1	Terrestrial Link Open
		0	Terrestrial Link Close
6-8	Spare	1	
		0	

Description for [Status]



Description of Service

Flag	Meaning
D	Maritime Distress Alerting
S	SafetyNET Traffic
C	Inmarsat-C Traffic
T	Store and Forward
R	Enhanced Preassigned Data Reporting
E	Enhanced Data Reporting
N	Closed Network
F	FleetNET Traffic
P	Prefixed Store and Forward Message Supported
I	ITA2 Transmission Supported
B	Data Transmission Supported
L	Low Power C MES Supported

Description for [Service]

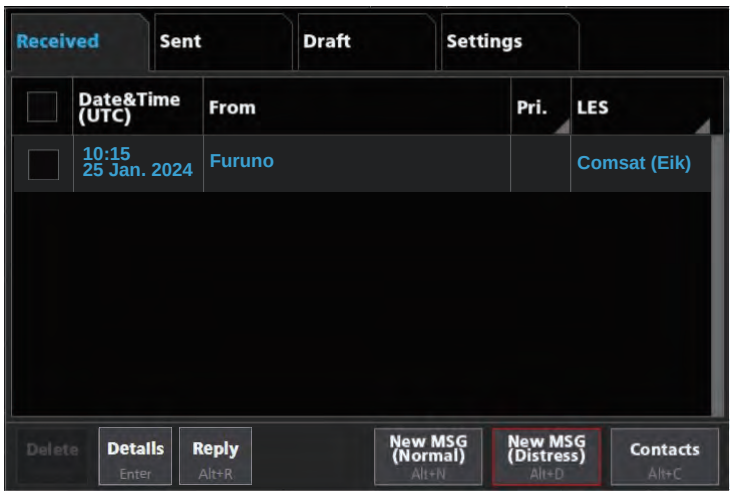
To close the information window, select [Close] (**Esc**).

3.6 Contacts List

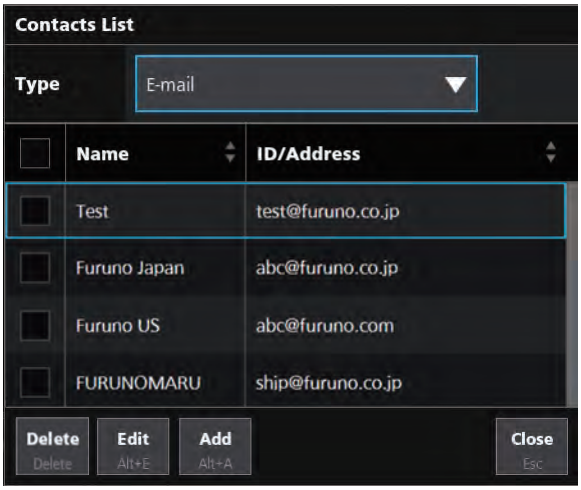
3.6.1 How to add/edit destinations to the contacts list

The FELCOM20 provides an address book for storing 99 destination IDs. Enter/edit destination IDs as shown below.

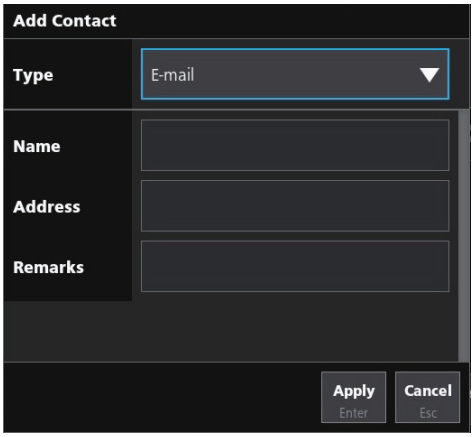
1. Select [Message] (**F2**) to open the message screen.



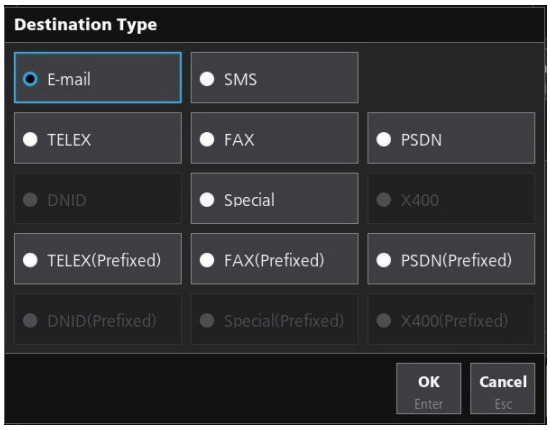
2. Select [Contacts] (**Alt** + **C**) to open the [Contacts List] window. If a USB flash memory is inserted, the [Select operation to Contact List] window appears (see subsection 3.6.3). Select [Show] (**Enter**) to open the [Contacts List] window.



3. For adding a destination, select [Add] (**Alt** + **A**) to open the [Add Contact] window. For editing the destination, select it and select [Edit] (**Alt** + **E**) to open the [Edit Contact] window. The figure below shows the [Add Contact] window.



4. Select [Type] to open the [Destination Type] window.



5. Select the destination type, then select [OK] (**Enter**).
   [E-mail]: E-mail (electronic mail) service
   [SMS]: Short Message Service
   [TELEX] / [TELEX(Prefixed)]: Telex communication
   [FAX] / [FAX(Prefixed)]: Facsimile service
   [PSDN] / [PSDN(Prefixed)]: Packet Switched Data Network to an office computer via a data network using X.25 standard.
   [Special]: Ship-to shore requests for safety service, accessed by using special 2-digit codes.
6. Select [Name], then enter the destination name.
7. Follow the appropriate procedure below depending on the destination type selected in step 5.

Note: If all required fields for the same communication type are identical when registering or editing, the error message “Value is used.” appears, and you can not register or edit the destination. If there is a duplicate, re-enter the information.

Procedure for e-mail

1. Select [Address], then enter the e-mail address of the recipient.
   Note: The characters that can be used in e-mail addresses are half-width alphanumeric characters (a-z, A-Z, 0-9), hyphens (-), underscores (_), and dots (.). Using any other characters may result in the e-mail not being sent correctly.
2. Select [Remarks], then enter remarks.

3. Select [Apply] (**Enter**).
4. To enter another e-mail address, repeat the procedure from step 2 on page 3-11.
5. Select [Close] (**Esc**) to close the [Contacts List] window.

Procedure for SMS

1. Select [Address], then enter the recipient's mobile phone number, beginning with the country code.
2. Select [Remarks], then enter remarks.
3. Select [Apply] (**Enter**).
4. To enter another SMS recipient, repeat the procedure from step 2 on page 3-11.
5. Select [Close] (**Esc**) to close the [Contacts List] window.

Procedure for telex

1. Select [Country/Ocean Code].
2. For ship-to-shore telex, enter the international telex country code (see APPX. 4); for ship-to-ship telex, enter the ocean region code (AOR-East: 581, POR: 582, IOR: 583, AOR-West: 584).
3. Select [Station ID], then enter the telex subscriber number (for ship-to-shore), or MES Inmarsat Mobile Number (for ship-to-ship).
4. Select [Remarks], then enter remarks.
5. Select [Apply] (**Enter**).
6. To enter another telex recipient, repeat the procedure from step 2 on page 3-11.
7. Select [Close] (**Esc**) to close the [Contacts List] window.

Procedure for Fax

1. Select [Country/Ocean Code].
2. For ship-to-shore fax, enter the international country code (see APPX. 4); for ship-to-ship fax, enter the ocean region code (AOR-East: 581, POR: 582, IOR: 583, AOR-West: 584).
3. Select [Station ID], then enter the fax number.
4. Select [Modem Type] to open the [Modem Type] window.



5. Select the modem type used by the subscriber, then select [OK] (**Enter**). For a landline fax or a fax-equipped Inmarsat B MES, select [T30] ([FAX]).
6. Select [Remarks], then enter remarks.

7. Select [Apply] (**Enter**).
8. To enter another fax recipient, repeat the procedure from step 2 on page 3-11.
9. Select [Close] (**Esc**) to close the [Contacts List] window.

3.6.2 How to delete a destination from the contacts list

Note: When a destination is deleted from the contacts list, make sure to check the recipient before editing the saved message or resending the sent message.

1. Select [Message] (**F2**) to open the [Message] screen.
2. Select [Contacts] (**Alt** + **C**) to open the [Contacts List] window.
3. Select (✓) the destination to delete, then select [Delete] (**Delete**). The confirmation message "Delete the selected item(s). Are you sure?" appears.
4. Select [OK] (**Enter**).

3.6.3 How to import a contacts list

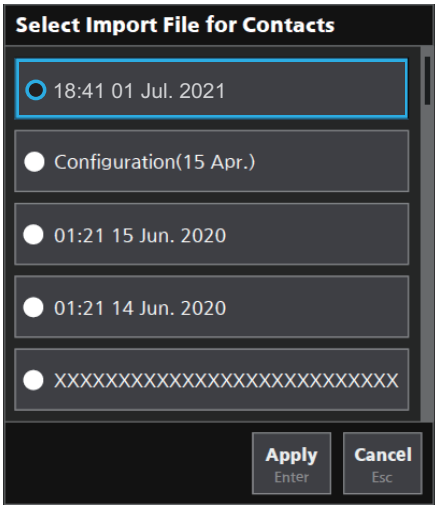
Note: Insert the USB flash memory into the front USB port (see subsection 2.1.5) before starting this procedure.

1. Select [Message] (**F2**) to open the [Message] screen.
2. Select [Contacts] (**Alt** + **C**) to open the [Select operation to Contacts List] window.



Shows [Contact List]
(see step 2 in subsection 3.6.1).

3. To import the Contacts list from the USB flash memory, select [Import] (**Alt** + **I**) to open the [Select Import File for Contacts] window.



4. Select the file to import, then select [Apply] (**Enter**). The confirmation message "All contacts will be replaced. Continue?" appears.

5. Select [OK] (**Enter**).
6. Select [Close] (**Esc**) to close the [Select operation to Contacts List] window.

3.6.4 How to export the contacts list

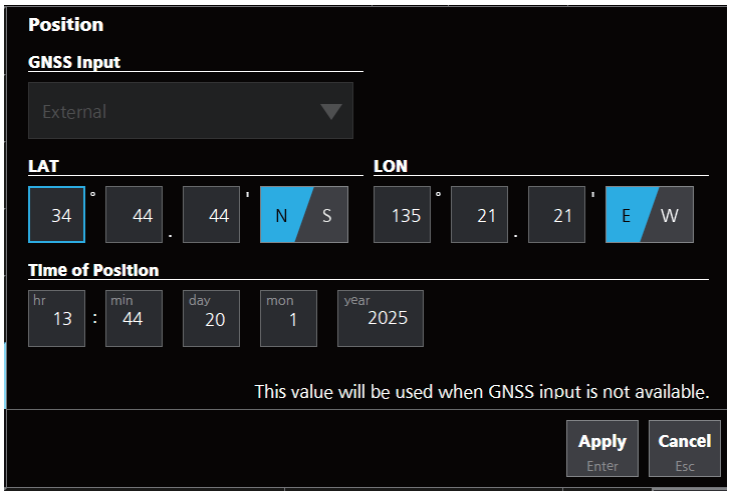
Note: Insert the USB flash memory into the front USB port (see subsection 2.1.5) before starting this procedure.

1. Select [Message] (**F2**) to open the [Message] screen.
2. Select [Contacts] (**Alt** + **C**) to open the [Select operation to Contacts List] window.
3. To export the Contacts list to the USB flash memory, select [Export] (**Alt** + **E**). The confirmation message "Start export. Are you sure?" appears.
4. Select [OK] (**Enter**).
5. Select [Close] (**Esc**) to close the [Select operation to Contacts List] window.

3.7 How to Enter Position

When there is no navigation data or the [GNSS Input] is set to [Manual Input] (during the installation), enter the ship's position manually.

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Position].



Note: [GNSS Input] indicates the navigator connected to the FELCOM20, and cannot be operated.

3. Select [LAT], then enter latitude. Select [N] or [S] as appropriate.
4. Select [LON], then enter longitude. Select [E] or [W] as appropriate.
5. Select [Time of Position], then enter the current date and time.
6. Select [Apply] (**Enter**) to confirm the selection.

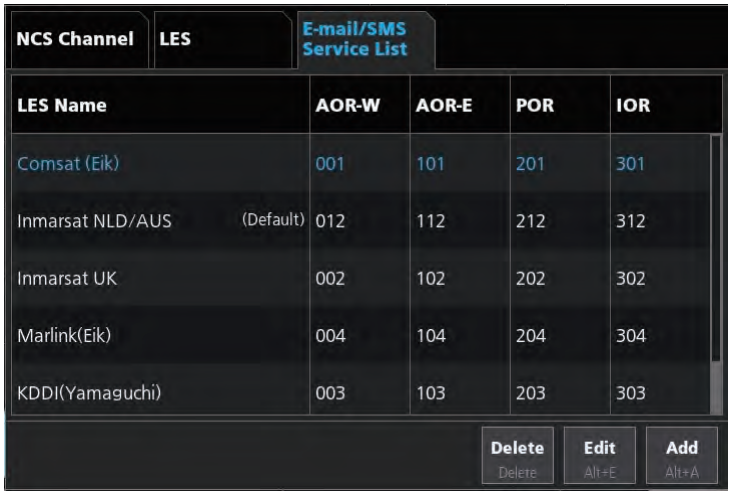
The position entered appears at the top right corner of the screen. It is used as the own ship's position when sending the distress alert (see chapter 6).

3.8 E-mail Service/SMS Destination List

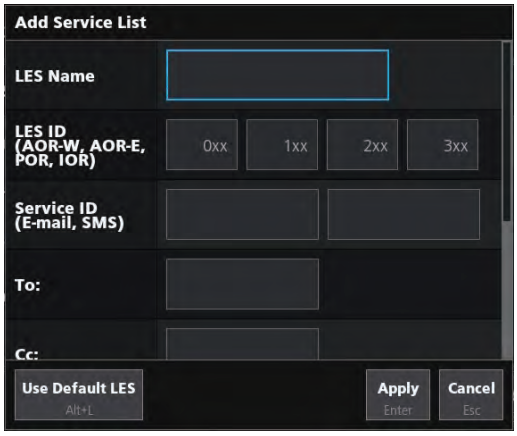
E-mail service providers and SMS destinations are already registered in the FELCOM 20. To add a new e-mail service provider or SMS destination, or to edit the registered destinations, follow the procedure below.

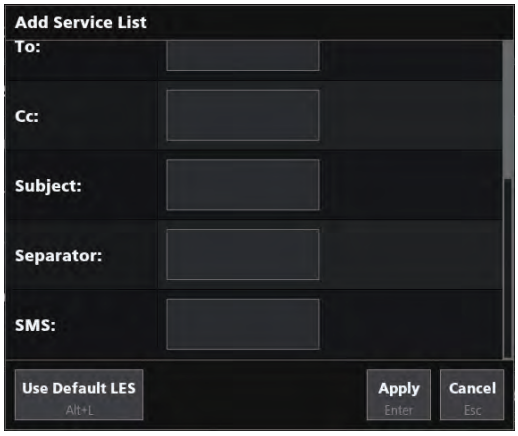
Note: The [E-mail/SMS Service List] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Inmarsat-C Network Settings].
3. Select the [E-mail/SMS Service List] tab.



4. For adding a destination, select [Add] (**Alt** + **A**) to open the [Add Service List] window. For editing a destination, select the destination to edit, then select [Edit] (**Alt** + **E**) to open the [Edit Service List] window. The figure below shows the [Add Service List] window.





Enter the data for the LES which offers e-mail services. For details, contact the LES directly.

5. Select [LES Name], then enter the name of the LES that provides the e-mail or SMS service.
6. Select [LES ID (AOR-W, AOR-E, POR, IOR)], then enter the LES ID for AOR-W, AOR-E, POR and IOR in order.
7. Select [Service ID (E-mail, SMS)], then enter the service ID for e-mail and SMS in order.
8. Select [To:], then enter appropriate “To” header.
9. Select [Cc:], then enter appropriate “Cc” header.

10. Select [Subject:], then enter appropriate “Subject” header.
11. Select [Separator:], then enter appropriate “Separator” (for example, blank space, STX, etc.).
12. Select [SMS], then enter special Prefix “sms+” before the telephone number if necessary. For example, for Singapore Telecom, enter sms+6590123456789.
13. Select [Apply] (**Enter**) to confirm the selection.

How to delete an E-mail/SMS destination

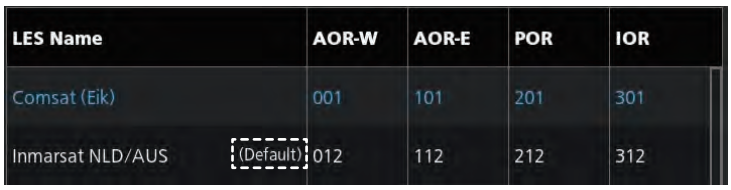
To delete an E-mail/SMS destination, select it on the [E-mail/SMS Service List] tab, then select [Delete] (**Delete**). The confirmation message "Delete the selected item(s). Are you sure?" appears. Select [OK] (**Enter**).

3.9 E-mail/SMS Settings

Select the LES where to forward e-mail or SMS. Also, you may need to register with an LES which provides e-mail and SMS services.

Note: The [E-mail/SMS Service List] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Inmarsat-C Network Settings].
3. Select the [E-mail/SMS Service List] tab.
4. Select the LES where to forward e-mail or SMS, then select [Edit] (**Alt** + **E**) to open the [Edit Service List] window.
5. Select [Use Default LES] (**Alt** + **L**). The confirmation message "Changing to the default LES for sending E-mail/SMS messages. Are you sure?" appears.
6. Select [OK] (**Enter**).
7. Select [Apply] (**Enter**) to close the [Edit Service List]. The indication "Default" is displayed after the selected LES name.



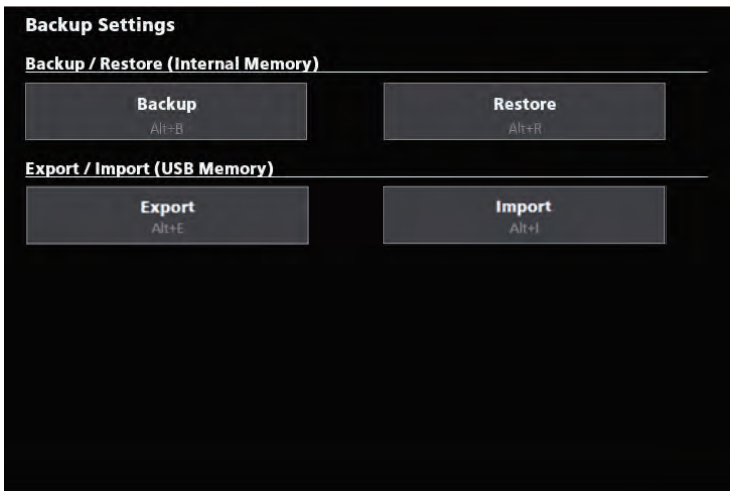
3.10 How to Import, Export the System Settings

You can import/restore and export/backup the system settings from and to a USB flash memory or the internal memory. This allows you backup system settings and import them into the FELCOM20 in the event of a problem.

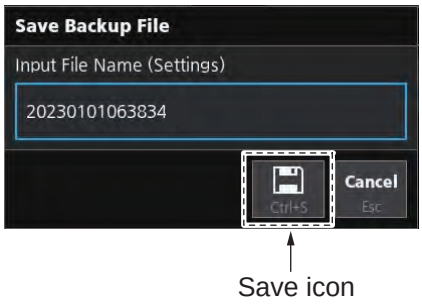
3.10.1 How to save the system settings to the internal memory

Note: The [Backup] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Backup].



3. Select [Backup] (**Alt** + **B**) to open the [Save Backup File] window.



4. Select [Input File Name (Settings)], then enter the file name.
5. Select the save icon (**Ctrl** + **S**). The confirmation message "Start saving. Are you sure?" appears.
6. Select [OK] (**Enter**). After saving is completed, the notification message "Completed." appears.

   Note: In the following cases, an error message appears.

   - When the same file name exists, the message "File already exists." appears.
   - When no file name is entered, the message "Enter a file name." appears.
   - When the file memory is full, the message "The oldest settings will be deleted. Are you sure?" appears. To make room for the latest, select [OK] (**Enter**) to delete the oldest.

3.10.2 How to export the system settings to a USB flash memory

Note 1: The [Backup] menu requires administrator access rights.

Note 2: Insert the USB flash memory into the front USB port (see subsection 2.1.5) before starting this procedure.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Backup].
3. Select [Export] (**Alt** + **E**). The confirmation message "Export the setting data to USB storage. Continue?" appears.
4. Select [OK] (**Enter**). After export is completed, the notification message "Successfully exported setting data" appears. The file name for the exported settings is automatically set as follows.

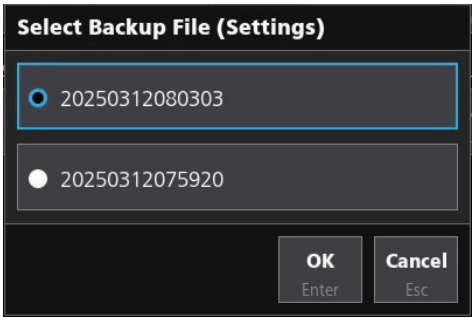
MV-FURUNO_FELCOM20_xxxx_Setting_20231012134228.fs

Ship's name | Model name | Software version | Fixing | Current date and time

3.10.3 How to restore the system settings from the internal memory

Note: The [Backup] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Backup].
3. Select [Restore] (**Alt** + **R**) to open the [Select Backup File (Settings)] window.



4. Select the file to restore, then select [OK] (**Enter**). The confirmation message "All settings will be replaced. Continue?" appears.
5. Select [OK] (**Enter**). After restore is completed, the notification message "Completed." appears.

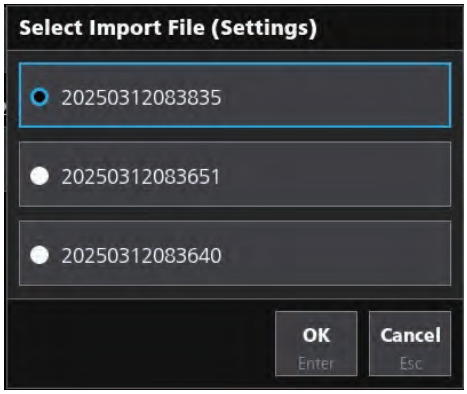
3.10.4 How to import system settings from a USB flash memory

Note 1: The [Backup] menu requires administrator access rights.

Note 2: Insert the USB flash memory into the front USB port (see subsection 2.1.5) before starting this procedure.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Backup].

3. Select [Import] (**Alt** + **I**) to open the [Select Import File (Settings)] window.



4. Select the file to import, then select [OK] (**Enter**). The confirmation message "All settings will be replaced. Continue?" appears.
5. Select [OK] (**Enter**). After import is completed, the confirmation message "Completed." appears.

4. INMARSAT COMMUNICATIONS

This chapter explains how to send and receive in the Inmarsat system. Before conducting any communications, be sure to login with the NCS in your area, following the instructions in section 3.2.1.

To send e-mail, register for e-mail services with appropriate LES which provides such services. Further, it is necessary to register with appropriate LES to receive e-mail from land mail system. For further details, contact appropriate LES.

4.1 How to Send Messages

To send a message, create the message, attach the address of the recipient and then send it to the LES. The address of the recipient in the Inmarsat C system is his telex number, for transmission via landline, or MES Inmarsat Mobile Number (IMN), when sending to a ship.

The message can be one you have just prepared or one stored on the internal memory.

4.1.1 Code description

Code can be specified at the terminal unit as follows:

IA5: International alphabet No. 5, ASCII code (7 bit). Specify this code to send English containing lower case alphabet.

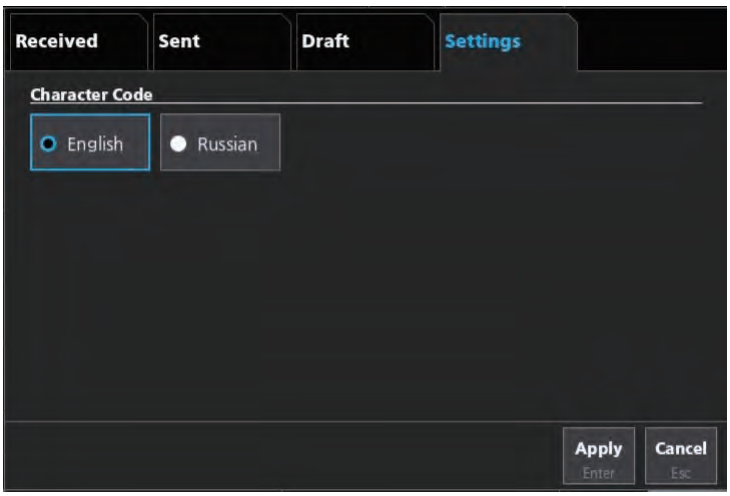
ITA2: No. 2 international communications alphabet (5 bit). Specify this code for message which contains only No. 2 international communications alphabet (see APPX.4). ITA2 code is sent faster than IA5 code. Land-based telex equipment uses ITA2. The LES converts all codes into ITA2. Code which cannot be converted is shown with a question mark (?).

DATA: Data (8 bit). Use this code to send data.

Message	Subscriber	Destination type	Code	Remarks
English	Inmarsat C MES	Telex	IA5	
	Telex	Telex	ITA2	
	Fax	PSTN	IA5	Modem type “T30”.
	E-mail	E-mail	IA5	
Russian	Inmarsat C MES	PSDN	DATA	
	Fax	Not available		
	E-mail	E-mail	DATA	

How to select the character code

1. Select [Message] (**F2**) to open the message screen.
2. Select the [Settings] tab.



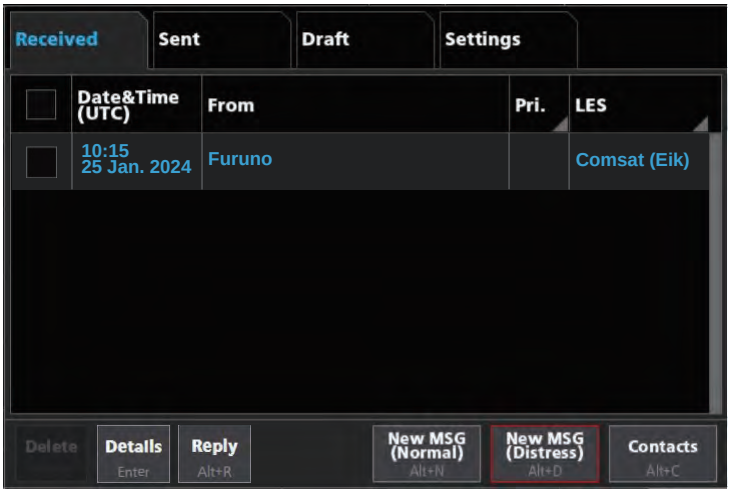
3. Select [English] or [Russian], then select [Apply] (**Enter**). The notification message "Completed." appears.

4.1.2 How to send messages

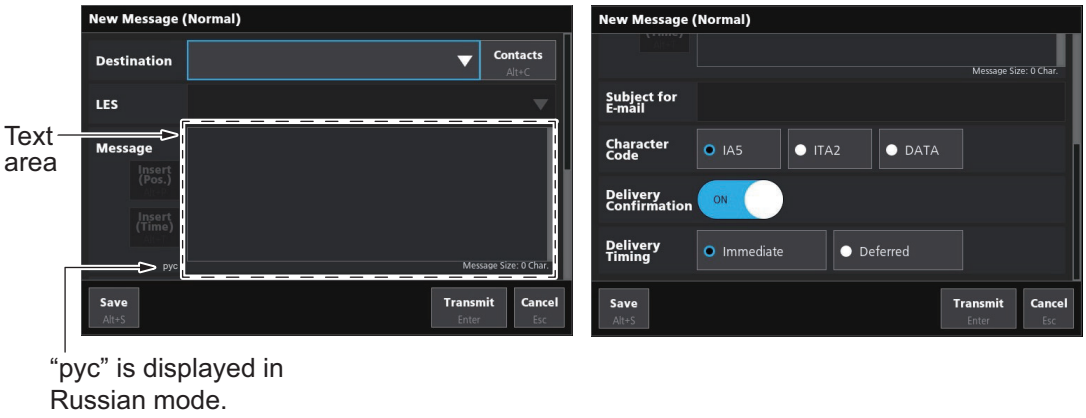
This section explains how to send a normal message, via fax, telex, e-mail or SMS. For distress transmission, see chapter 6. For 2-digit code services, see the table in subsection 4.1.8.

How to send a message to a destination registered on the Contacts list

1. Select [Message] (**F2**) to open the message screen.



2. Select [New MSG (Normal)] (**Alt** + **N**) to open the [New Message (Normal)] window.



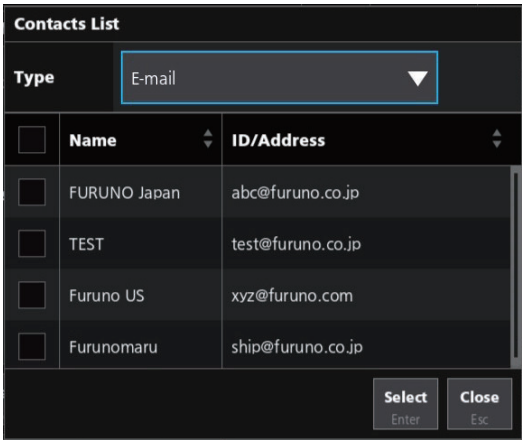
"pyc" is displayed in Russian mode.

3. Enter your message in the text area.

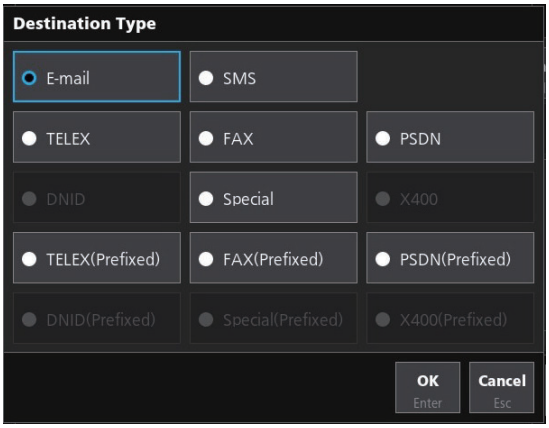
   Note 1: The number of characters for your message is displayed in [Message Size]. When the number of characters is more than 32,000 (16,000 in Russian mode), the message size is displayed in red.

   Note 2: SMS messages over 160 characters in length are sent in parts.

4. Select [Contacts] (**Alt** + **C**) to open the [Contacts List] window.



5. Select [Type] to open the [Destination Type] window.



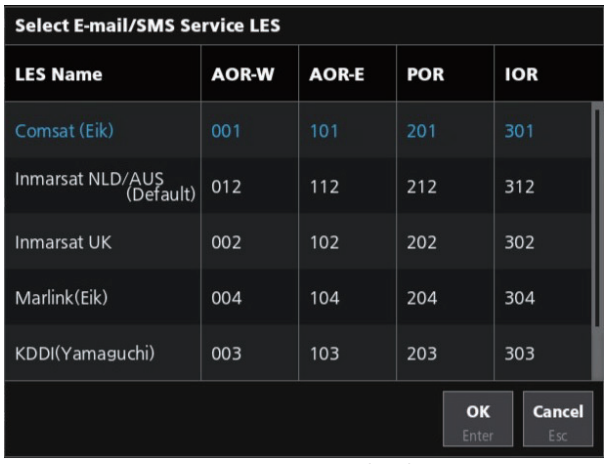
6. Select the destination type, then select [OK] (**Enter**).

7. Select the address(es) to send the message, then select [Select] (**Enter**).

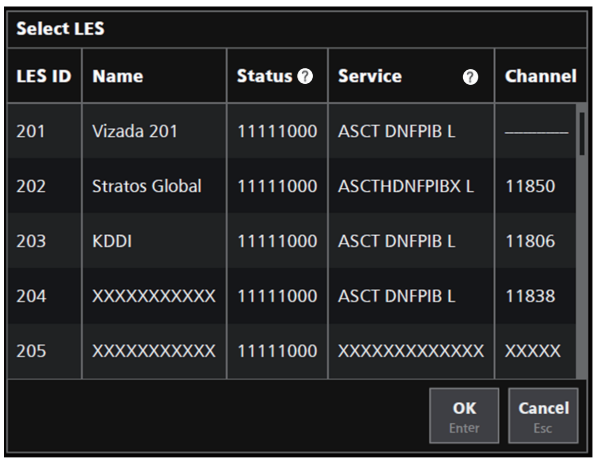
   Note 1: Multiple addressing* can be set. * = Max. 10 telex destinations, 7 FAX and 10 e-mail, and one SMS.

   Note 2: When a destination is deleted from the contacts list (see subsection 3.6.2), make sure to check the recipient before editing the saved message or resending the sent message.

8. Select [LES] to open the [Select E-mail/SMS Service LES] or [Select LES] window. If the communication format is e-mail or SMS, the LES set in section 3.9 appears. If the communication format is DNID, the LES associated with the selected DNID appears.



For e-mail and SMS



For others

9. Select the LES, then select [OK] (**Enter**).
10. To insert the current position, place the cursor where to insert the information in [Message], then select [Insert (Pos.)] (**Alt** + **P**).
11. To insert the current time, place the cursor where to insert the information in [Message], then select [Insert (Time)] (**Alt** + **T**).
12. For e-mail, select [Subject for E-mail] then enter the subject. For other communication formats, go to step 13.
    Note: Since only e-mail addresses are accepted, any subject entered in this field for other destination type is deleted when the message is sent.
13. Select [IA5] (for e-mail, fax, SMS), [ITA2] (for telex) or [DATA] as appropriate in [Character Code].
14. To request notification of delivery from the LES, turn on [Delivery Confirmation]. If not necessary, turn off [Delivery Confirmation].
15. Select [Immediate] or [Deferred] in [Delivery Timing]. [Delivery Timing] requests the LES for “Immediate” or “Deferred” transmission to the recipient designated. For information on this service, consult with LES where message is to be sent.
16. Select [Transmit] (**Enter**). The confirmation message "Start transmission. Are you sure?" appears.
    Note: To save the message as a draft, select [Save] (**Alt** + **S**) instead of [Transmit] (**Enter**). The confirmation message "Save draft. Are you sure?" appears. Select [OK] (**Enter**) to save the message to the [Draft] tab. After saving the message, the message "Saved." appears.
17. Select [OK] (**Enter**) to send the message to the message queue. (To escape, select [Cancel] (**Esc**).)
    Note: When you send a message which contains more than 32,000 characters of data, the message "Invalid Value(s). Message:MAX:32000 Char." appears.
18. Select [Dashboard] (**F1)** to return to the dashboard screen.

[SENDING] appears in [Current Status] while the message is being sent. If the message was sent successfully, "Completed." appears and the TX message is printed (if

[Delivery Confirmation] is turned off). You can view details about the message in the [Sent] tab of the message screen (see subsection 4.1.5).

```
--------------------------------------------------------------------------------
Sent Message

LES          :  KDDI                    Message Ref .  No.   :  00001234
Priority     :  Normal
Size         :  20 characters
Status       :  Success
Date & Time  :  00 : 06  02  Jan.  2024  (UTC)
Destination  :  TELEX (Prefixed)
                0011122222222222222
                0011133333333333333
                0011144444444444444


This is test mail!!!!!

--------------------------------------------------------------------------------
```

Display log printout example ([Delivery Confirmation]: off)

When [Delivery Confirmation] is turned on and you receive a delivery status message, the delivery status message is printed.

```
--------------------------------------------------------------------------------
Sent Message

LES          :  KDDI                    Message Ref .  No.   :  00001234
Priority     :  Normal
Size         :  20 characters
Status       :  Success
Date & Time  :  00 : 06  02  Jan.  2024  (UTC)
Destination  :  E-mail
                test@furuno.co.jp   (Completed)
                test@furuno.com   (Completed)


This is test mail!!!!!


--------------------------------------------------------------------------------
```

Display log printout example ([Delivery Confirmation]: on, message delivered)

```
--------------------------------------------------------------------------------
Sent Message

LES          :  KDDI                    Message Ref .  No.   :  00001234
Priority     :  Normal
Size         :  20 characters
Status       :  Success
Date & Time  :  00 : 06  02  Jan.  2024  (UTC)
Destination  :  E-mail
                test@furuno.co.jp   (NP)
                test@furuno.com   (---)


This is test mail!!!!!


--------------------------------------------------------------------------------
```

Display log printout example ([Delivery Confirmation]: on, message not delivered)

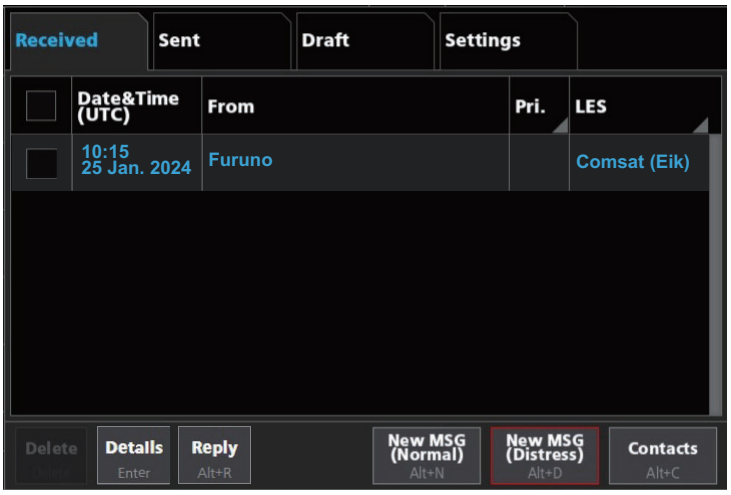
Status of sent message

The terminal unit displays the status of messages you have sent as follows.

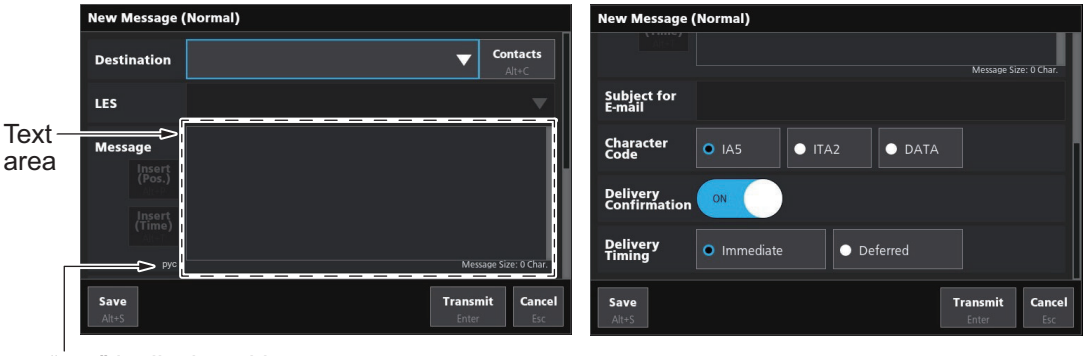
"Failed to send message.": This appears if the message could not be sent because of technical reasons such as satellite malfunction, signal degradation, or no reply from the LES. Try to send the message again.
"Call rejected by LES because of xxxxx." (xxxxx: the message of sub ID): This appears when the LES rejects the message because of non-technical reasons such as unpaid subscriber's fee.
"Call pending by LES because of xxxxx." (xxxxx: the message of sub ID): This appears when the circuits at the LES are busy. Your message will be sent once a circuit becomes clear.

How to send a message to a destination not registered in the Contacts list

1. Select [Message] (**F2**) to open the message screen.



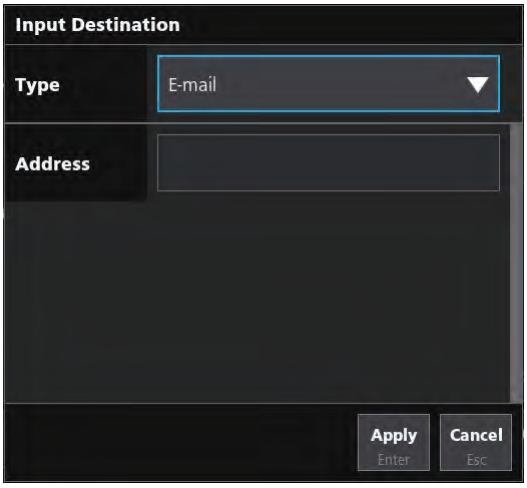
2. Select [New MSG (Normal)] (**Alt** + **N**) to open the [New Message (Normal)] window.



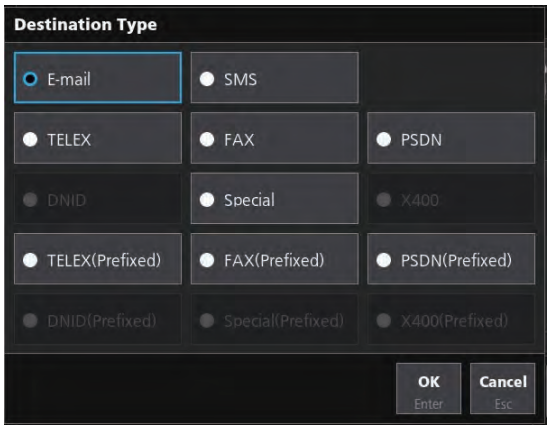
"pyc" is displayed in Russian mode.

3. Enter your message in the text area.
   Note 1: The number of characters for your message is displayed in [Message Size]. When the number of characters is more than 32,000 (16,000 in Russian mode), the message size is displayed in red.
   Note 2: SMS messages over 160 characters in length are sent in parts.

4. Select [Destination] to open the [Input Destination] window.



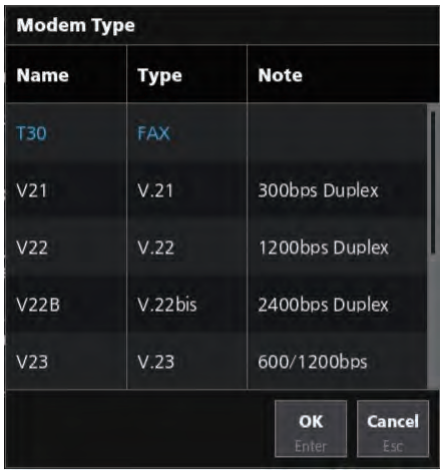
5. Select [Type] to open the [Destination Type] window.



6. Select the destination type, then select [OK] (**Enter**).
7. Do one of the following according to the destination type selected at step 6.
   Destination type: E-mail/SMS
   Select [Address], then enter the e-mail address or mobile phone number.
   Destination type: TELEX/TELEX(Prefixed)
   1) Select [Station ID], then enter the station ID.
   2) For ship-to-shore telex, select [Country/Ocean Code], then enter recipient's telex country code (see APPX. 4). For example, to use KDDI (Japan), enter 72. For ship-to-ship telex, enter recipient's ocean region: AOR-East, 581; POR, 582; IOR, 583, AOR-West, 584.
   3) For [TELEX(Prefixed)], select [Prefix Code], then enter the prefix code.

   Destination type: FAX/FAX(Prefixed)
   1) Select [Station ID], then enter the station ID.
   2) For ship-to-shore fax, select [Country/Ocean Code], then enter recipient's telex country code. For example, to use KDDI (Japan), enter 72. For ship-to-ship fax, enter recipient's ocean region: AOR-East, 581; POR, 582; IOR, 583, AOR-West, 584.

3) Select [Modem Type] to open the [Modem Type] window.



4) Select the modem type used by the recipient, then select [OK] (**Enter**). For transmission to landline fax or to fax-equipped Inmarsat B MES, select [T30]. (You cannot send a FAX to another Inmarsat C MES.)

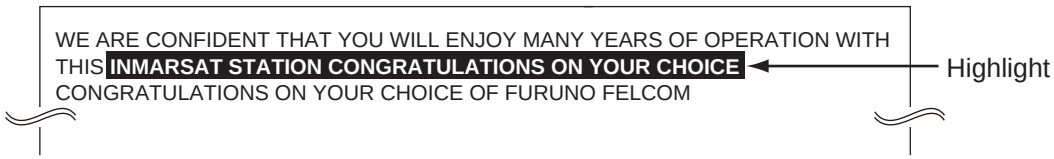
5) For [FAX(Prefixed)], select [Prefix Code], then enter the prefix code.

8. Select [Apply] (**Enter**).
9. Follow from step 8 on page 4-4.

4.1.3 Text operations

How to cut and paste text

1. Tap or use the arrow keys to place the cursor on the first character of the text to cut.
2. Highlight the text to be cut by pressing the → key while pressing and holding the **Shift** key. You can use the ← or → key to adjust the highlight. To set the range by row, press the ↓ key while pressing and holding the **Shift** key. The figure below shows the appearance of highlighted text.



3. Press the **X** key while pressing and holding the **Ctrl** key. The highlighted text is cut and the remaining text is reformatted.
4. To move the text to a new location after it has been cut, place the cursor at the exact spot in the message where the cut text is to start.
5. Press the **V** key while pressing and holding the **Ctrl** key. The text is inserted at the cursor location.

How to copy and paste text

1. Select the text to copy.
2. Press the **C** key while pressing and holding the **Ctrl** key. The selected text is copied to the clipboard.
3. Place the cursor at the exact spot on the message where the copied text is to start.
4. Press the **V** key while pressing and holding the **Ctrl** key. The text is inserted at the cursor location.

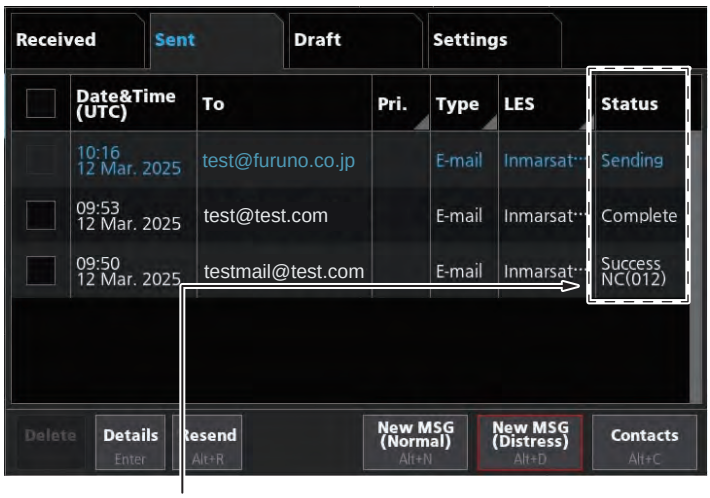
4.1.4 How to send saved messages

1. Select [Message] (**F2**) to open the message screen.
2. Select the [Draft] tab.
3. Select a message, then select [Edit] (**Enter**).
4. Select [Contacts] (**Alt** + **C**) to open the [Contacts List] window.
5. To send the message to a destination registered on the Contacts list, follow from step 5 on page 4-3. To send to a destination not listed on the Contacts list, follow from step 5 on page 4-7.

4.1.5 How to cancel transmission on messages awaiting transmission

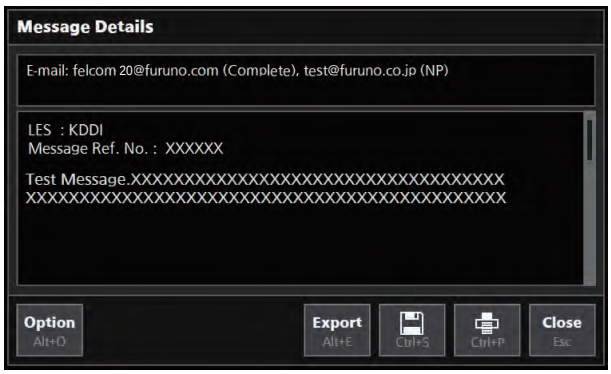
As noted earlier a TX message is held in the buffer, usually until it is sent satisfactorily. To cancel transmission on a message held in the buffer, do the following.

1. Select [Message] (**F2**) to open the message screen.
2. Select the [Sent] tab.

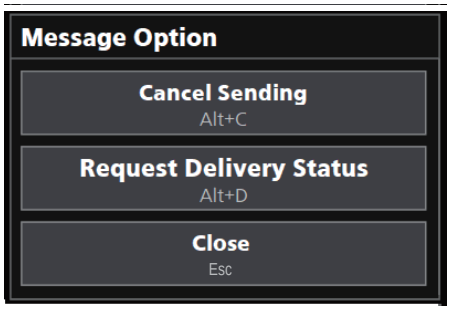


Status
[Waiting]: Waiting to send message.
[Sending]: Now sending message.
[Success]: Successful transmission.
[Failed]: Failed transmission.
[Rejected]: Message rejected by LES.
[Pending]: LES circuits occupied.
[Complete]: Completed transmission.
[Cancel]: Canceled transmission.

3. Select the message to cancel, then select [Details] (**Enter**) to open the [Message Details] window.



4. Select [Option] (**Alt** + **O**) to open the [Message Option] window.



5. Select [Cancel Sending] (**Alt** + **C**). The confirmation message appears.
   Note: This function is available for the messages with [Waiting], [Sending], and [Pending] status.
6. Select [OK] (**Enter**).

4.1.6 How to request delivery status

Automatically receiving delivery status

You can automatically receive delivery status of messages you send to a LES, by turning on [Delivery Confirmation] in [New Message (Normal)] window (see page 4-4).

How to manually request delivery status

You can manually request an LES for delivery status of a message you have sent within the past 24 hours.

1. Select [Message] (**F2**) to open the message screen.
2. Select the [Sent] tab.
3. Select the message to request the delivery, then select [Details] (**Enter**) to open the [Message Details] window.
4. Select [Option] (**Alt** + **O**) to open the [Message Option] window.
5. Select [Request Delivery Status] (**Alt** + **D**) to send the request. The confirmation message "Send a delivery status request. Are you sure?" appears.
   Note: This function is available for the messages with [Success] status.
6. Select [OK] (**Enter**).

Several minutes later the message "Successful Delivery Status Request." appears on the display.

4.1.7 How to resend sent messages

1. Select [Message] (**F2**) to open the message screen.
2. Select the [Sent] tab.
3. Select the message to resend, then select [Resend] (**Alt** + **R**) to open the [New Message (Normal)] window. The destination address and text are displayed. If necessary, additional text can be entered.
4. Follow from step 12 on page 4-4.

4.1.8 How to access the 2-digit code service

A range of special safety and general maritime services, known as the 2-digit code services, may be sent. The list below shows the 2-digit code services available.

1. Select [Message] (**F2**) to open the message screen.
2. Select [New MSG (Normal)] (**Alt** + **N**) to open the [New Message (Normal)] window.
3. Enter your message in the text area. To send a message to a destination registered on the Contacts list, go to step 4. To send a message to a destination not registered on the Contacts list, go to step 8.
4. Select [Contact] (**Alt** + **C**) to open the [Contacts List] window.
5. Select [Type] to open the [Destination Type] window.
6. Select [Special], then select [OK] (**Enter**).
7. Select the address(es) to send the message, then select [Select] (**Enter**). Go to step 13.
8. Select [Destination] to open the [Input Destination] window.
9. Select [Type] to open the [Destination Type] window.
10. Select [Special], then select [OK] (**Enter**).
11. Select [Station ID], then enter 2-digit code referring to the table below.

Code	Content	Remarks
31	Maritime enquiries	Request information including service offerings.
32	Medical advice	Request medical advice.
33	Technical assistance	Address technical enquiries to appropriate personnel.
37	Time and charges requested at end of call	Desirable for mobile operator when sending traffic for a third party.
38	Medical assistance	Request medical assistance.
39	Maritime assistance	Request maritime search and rescue assistance
41	Meteorological report	Necessary for ease of addressing weather reports from ship to meteorological centers.
42	Navigational hazards and warnings	Make urgent navigational meteorological danger reports.
43	Ship position reports	Route messages to ship safety reporting systems.

12. Select [Apply] (**Enter**).

13. Select [LES] to open the [Select LES] window.
14. Select the LES, then select [OK] (**Enter**).
15. Select [DATA] in [Character Code].
16. To request notification of delivery from the LES, turn on [Delivery Confirmation]. If not necessary, turn off [Delivery Confirmation].
17. Select [Immediate] or [Deferred] in [Delivery Timing]. [Delivery Timing] requests the LES for “Immediate” or “Deferred” transmission to the recipient designated. For information on this service, consult with LES where message is to be sent.
18. Select [Transmit] (**Enter**). The confirmation message "Start transmission. Are you sure?" appears.
    Note: To save the message as the draft, select [Save] (**Alt** + **S**) instead of [Transmit] (**Enter**). The confirmation message "Save draft. Are you sure?" appears. Select [OK] (**Enter**) to save the message to the [Draft] tab. After saving the message, the message "Saved." appears.
19. Select [OK] (**Enter**) to send the message to the message queue. (To escape, select [Cancel] (**Esc**).)
    Note: When you send a message which contains more than 32,000 characters of data, the message "Invalid Value(s). Message:MAX:32000 Char." appears.
20. Select [Dashboard] (**F1)** to return to the dashboard screen.

[SENDING] appears in [Current Status] while the message is being sent. If the message was sent successfully, "Completed." appears and the TX message is printed (if [Delivery Confirmation] is turned off). You can view details about the message in the [Sent] tab of the message screen (see subsection 4.1.5).

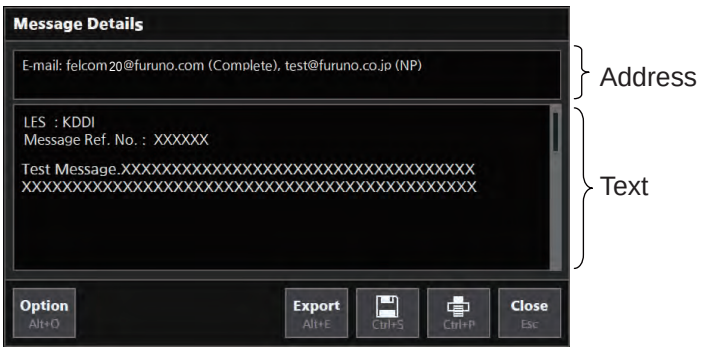
At present, not all LESs are offering the 2-digit code services. Contact the LES Operations Coordinator directly for information.

Some 2-digit code services may be provided free of charge by LESs, while other services are available for a fee, in some cases at reduced rates. For information, contact the LES directly.

4.1.9 Sent message contents

You can view the contents of the sent message as shown below.

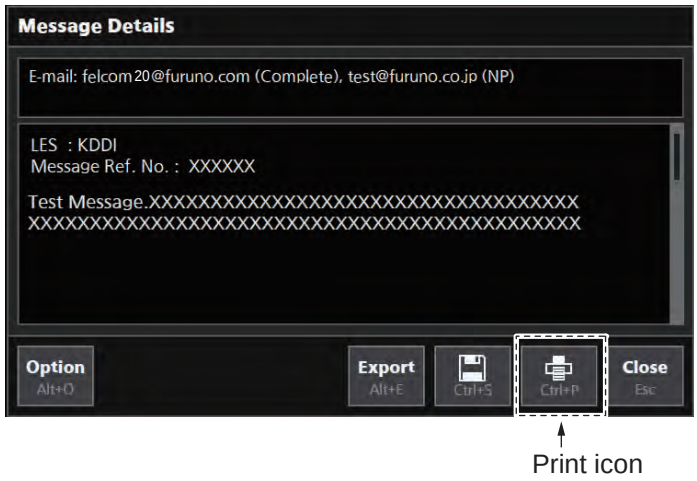
1. Select [Message] (**F2**) to open the message screen.
2. Select the [Sent] tab.
3. Select the message, then select [Details] (**Enter**) to show the message contents.



4. Select [Close] (**Esc**) to close the [Message Details] window.

4.1.10 How to print a sent message

1. Select [Message] (**F2**) to open the message screen.
2. Select the [Sent] tab.
3. Select the message to print, then select [Details] (**Enter**).



4. Select the print icon (**Ctrl** + **P**). The confirmation message "Start printing. Are you sure?" appears.
5. Select [OK] (**Enter**) to print the file. When printing is completed, the notification message "Printed" appears.
6. Select [Close] (**Esc**) to close the window.

How to automatically print sent messages

When [Sent Messages] in the [Auto Print] tab of the [Auto Save/Print] menu is turned on, sent messages are automatically printed.

4.1.11 How to delete a sent message

1. Select [Message] (**F2**) to open the message screen.
2. Select the [Sent] tab.
3. Select the message to delete, then select [Delete] (**Delete**). The confirmation message "Delete the selected item(s). Are you sure?" appears.
4. Select [OK] (**Enter**) to delete the message.

4.2 Receiving

4.2.1 When a message is received

When the FELCOM20 receives a telex or e-mail successfully, the message "Message received successfully." appears on the [System Information] screen (see subsection 8.8.3).

The number of unread messages is displayed in the [Message] side menu (see page 2-13). If there are more than 10 unread messages, “+9” is displayed.

Message contents

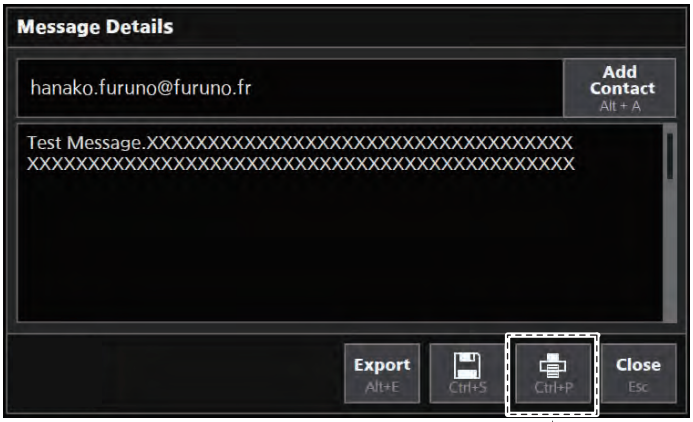
See subsection 4.2.2.

Printing

When [Received Messages] in the [Auto Print] tab of the [Auto Save/Print] menu is turned on, received messages are automatically printed. The messages with distress priority are automatically printed even if [Received Messages] is turned off.

4.2.2 How to display and manually print received messages

1. Select [Message] (**F2**) to open the message screen.
2. Select the [Received] tab.
3. Select the message, then select [Details] (**Enter**).



4. Select the print icon (**Ctrl** + **P**). The confirmation message "Start printing. Are you sure?" appears.
5. Select [OK] (**Enter**) to print the message.

About attachments

The FELCOM20 can receive a message with an attachment. When the attachment data are visible characters, they are displayed as they are in the received message text. When the attachment data are received as binary data, "This is binary message." is displayed.

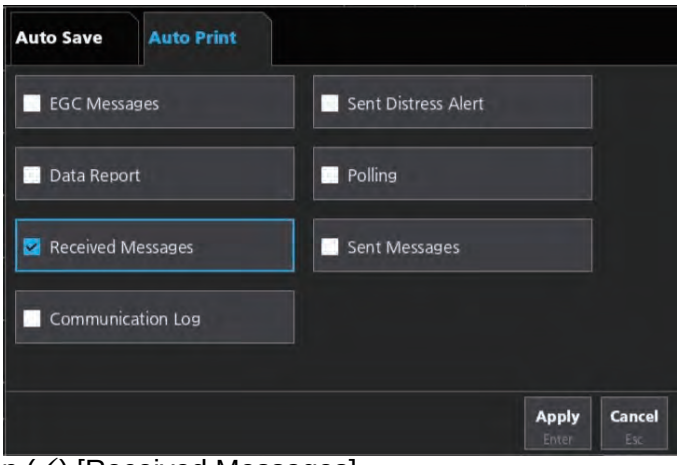
4.2.3 How to automatically print received messages

You can automatically print received messages.

Note: The [Auto Save/Print] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Auto Save/Print].

3. Select the [Auto Print] tab.

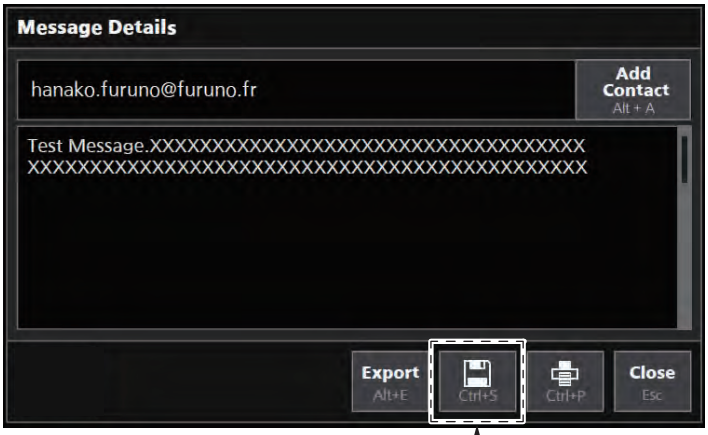


4. Turn on (✓) [Received Messages].
5. Select [Apply] (**Enter**) to confirm the selection.

4.2.4 How to save received messages

Note: To save the received message to a USB flash memory, insert the memory into the front USB port (see subsection 2.1.5).

1. Select [Message] (**F2**) to open the message screen.
2. Select the [Received] tab.
3. Select the message, then select [Details] (**Enter**) to open the [Message Details] window.



4. To save the selected message to the user data, select save icon (**Ctrl** + **S**). To save the selected message to a USB flash memory, select [Export] (**Alt** + **E**).

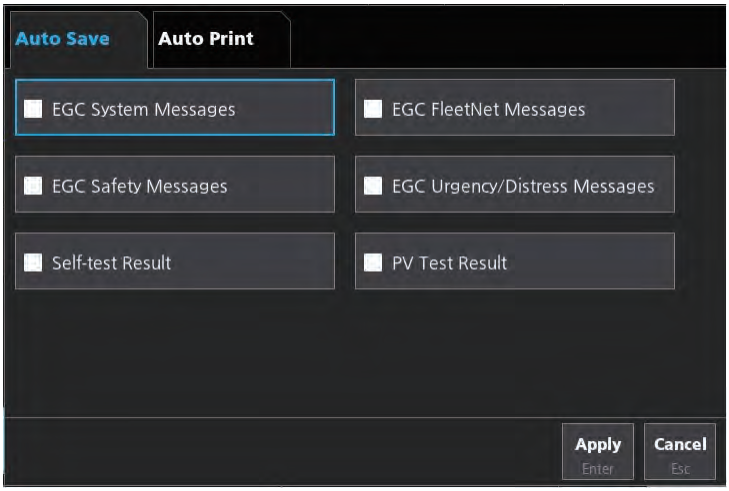
If the same file name is found on the USB flash memory or user data, the message "File already exists." appears.

4.2.5 How to automatically save received messages

Note: The [Auto Save/Print] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Auto Save/Print].

3. Select the [Auto Save] tab.



4. Turn on (✓) the message(s) to automatically save.
5. Select [Apply] (**Enter**) to confirm the selection.

4.2.6 How to reply to received messages

Note: This function is available only for e-mail.

1. Select [Message] (**F2**) to open the message screen.
2. Select the [Received] tab.
3. Select the message to reply, then select [Reply] (**Alt** + **R**) to open the [New Message (Normal)] window.
4. Follow from step 8 on page 4-4.

4.2.7 How to delete received messages

1. Select [Message] (**F2**) to open the message screen.
2. Select the [Received] tab.
3. Select the message to delete, then select [Delete] (**Delete**). The confirmation message "Delete the selected item(s). Are you sure?" appears.
4. Select [OK] (**Enter**).

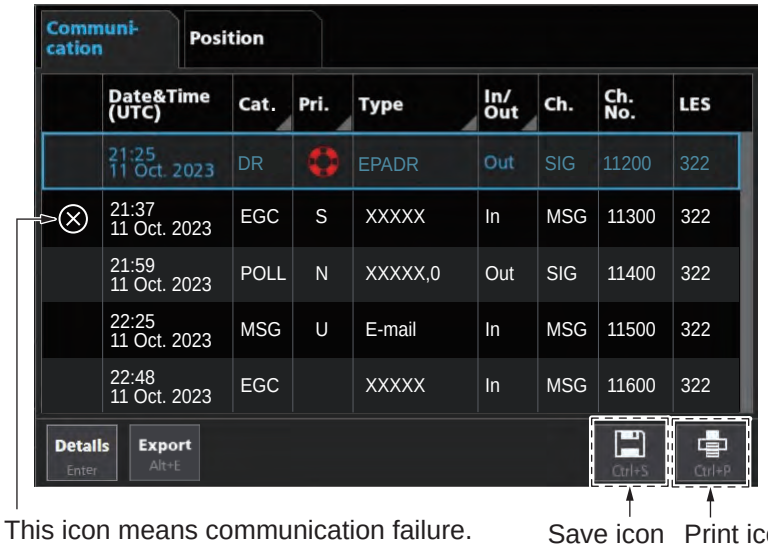
4.3 Communication Log

The Communication Log stores the particulars of the latest 100 received and sent messages. When the log becomes full, the oldest message is automatically deleted.

4.3.1 How to display, print, and save the communication log

Note: To export a communication log to a USB flash memory, insert the memory into the front USB port (see subsection 2.1.5).

1. Select [Logs] (**F4**) to open the log screen.
2. Select the [Communication] tab.



3. To print the communication log, select the print icon (**Ctrl** + **P**).
   To save the communication log to the user data, select the save icon (**Ctrl** + **S**).
   To export the communication log to a USB flash memory, select [Export] (**Alt** + **E**).
   The file name is automatically set as follows.

MV-FURUNO_FELCOM20_xxxx_ComLog_20240331094530

Ship's name / Model name / Software version / Fixing / Current date and time

Communication log description

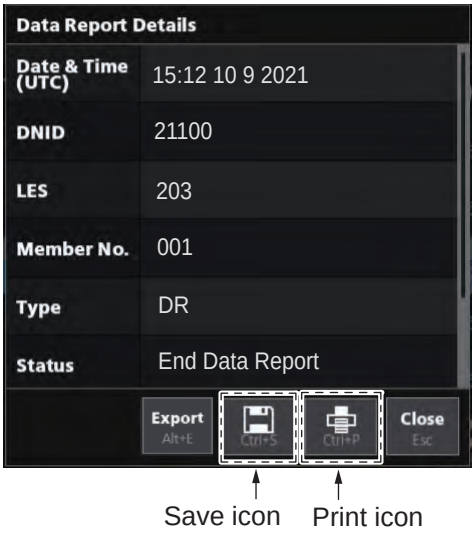
Item	Meaning
[Date&Time (UTC)]	Date and time the log is registered.
[Cat.]	Category (MSG, EGC, DR, POLL)
[Pri.]	Priority (Normal, Safety, Urgency, Distress, blank)
[Type]	Packet type (Telex, E-mail, FAX, SMS, PSDN, etc.)
[In/Out]	Reception (In) or transmission (Out)
[Ch]	Channel type (MSG, TDM, SIG)
[Ch No.]	Channel number
[LES]	ID of LES that handles the message.

Note: The communication logs are not deletable.

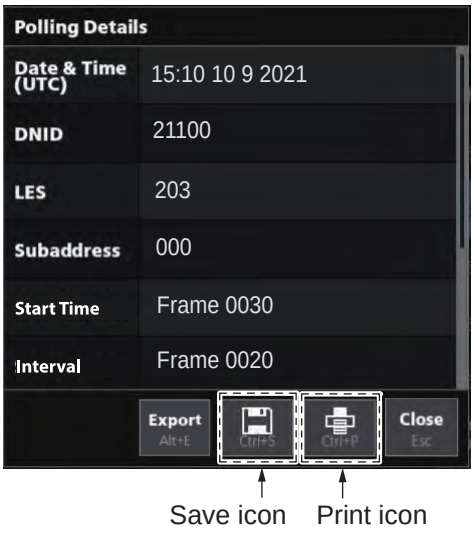
How to display the detail information for logs

To display the detailed information for a log (only for DR and POLL categories), select the log in the [Communication] tab, then select [Details] (**Enter**).

Categry: DR



Category: POLL



To print the detail log, select the print icon (**Ctrl** + **P**).

To save the detail log to the user data, select the save icon (**Ctrl** + **S**).

To export the detail log to a USB memory, select [Export] (**Alt** + **E**).

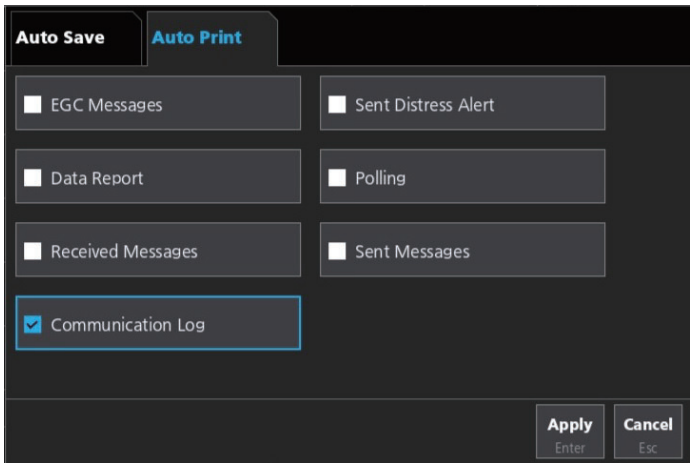
Item	Meaning
[Data Report Details]	
[Date & Time (UTC)]	Date and time the data report is sent.
[DNID]	Data network ID
[LES]	Land earth station ID
[Member No.]	DNID member number
[Type]	Type for the data report
[Status]	Sending status for data report
[Polling Details]	
[Date &Time (UTC)]	Date and time the polling is received.
[DNID]	Data network ID
[LES]	Land earth station ID
[Subaddress]	Sub address
[Start Time]	Transmission start time (start frame number)
[Interval]	Transmission interval (number for frames)
[Polling Command]	Command requested by polling

4.3.2 How to automatically print the communication log

Note: The [Auto Save/Print] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Auto Save/Print].

3. Select the [Auto Print] tab.



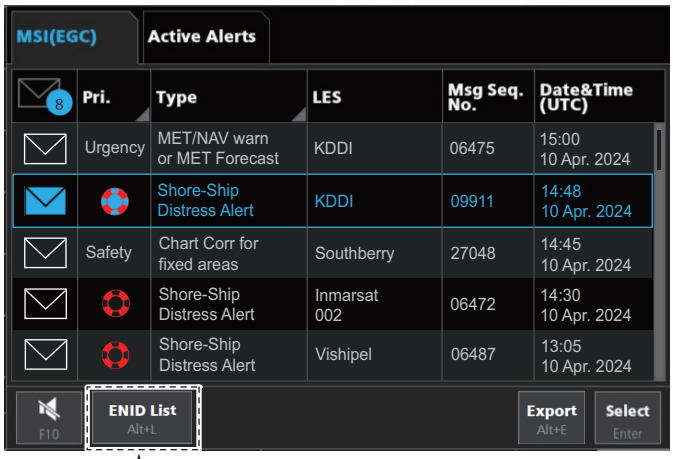
4. Turn on (✓) [Communication Log].
5. Select [Apply] (**Enter**) to confirm the selection.
   When the date changes, the communication log for the previous day is automatically printed.

4.4 EGC Messages

When an EGC message is received, the message "Now receiving EGC message." appears at the bottom left corner of the display. When [EGC Messages] in the [Auto Print] tab of the [Auto Save/Print] menu is turned on, EGC messages are automatically printed. Also, when [EGC System Messages], [EGC FleetNet Messages], [EGC Safety Messages], or [EGC Urgency/Distress Messages] in the [Auto Save] tab of the [Auto Save/Print] menu is turned on, EGC messages are automatically saved to the user data. (For details, see subsection 3.3.3.) This equipment can store a maximum of 100 EGC messages. When the EGC message memory becomes full, the oldest EGC message is automatically deleted.

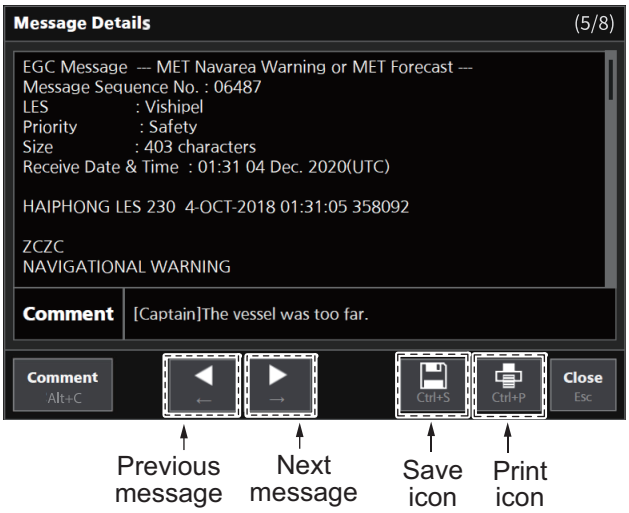
4.4.1 How to display and print EGC messages

1. Select the MSI F11 (MSI) icon (**F11**) at the bottom left corner of the display to open the message list.
2. Select the [MSI(EGC)] tab.



This button is displayed when the operating mode is set to [EGC Only] (see subsection 3.1.2).

3. Select a message, then select [Select] (**Enter**).



4. To print the message, select the print icon (**Ctrl** + **P**).
5. Select [Close] (**Esc**) to close the [Message Details] window.

4.4.2 How to display EGC closed network ID (ENID)

To join a FleetNET™ service, your MES must be registered with an information provider. The information provider adds the MES to the group which is to receive the service, by downloading a Group Call ID (via an LES which supports FleetNET™ broadcasts), uniquely addressed to the MES. The MES stores the ID and can accept broadcasts from the information provider. The MES operator cannot change this stored EGC closed network IDs (ENIDs). Up to 64 ENIDs are stored on a non-volatile memory.

The ENID stored can be accessed for downloading and deleting via the satellite path. An MES operator can inhibit (or activate as required), via the terminal unit, selected ENIDs previously downloaded.

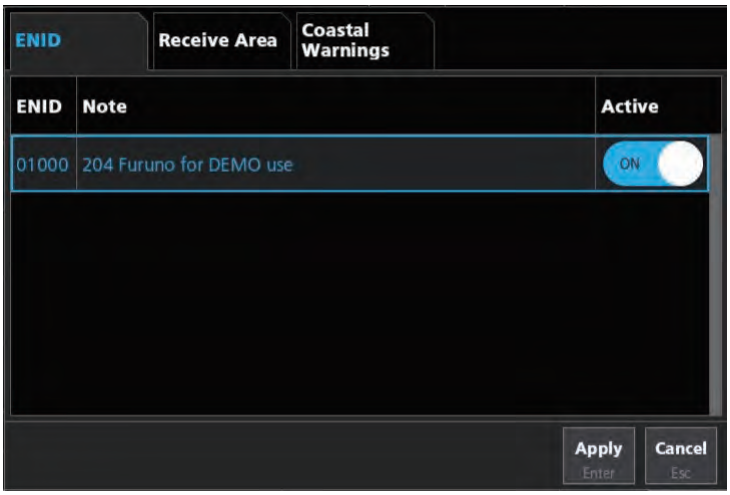
Along with the ENID the name of the information provider is stored. In the event that a download command is received and the ENID storage area is full, an ENID which has been disabled by the MES operator will be written over. If none has been disabled, then the new download is not accepted.

Follow the procedure below to activate or deactivate an ENID.

Note: The [EGC] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [EGC].

3. Select the [ENID] tab.



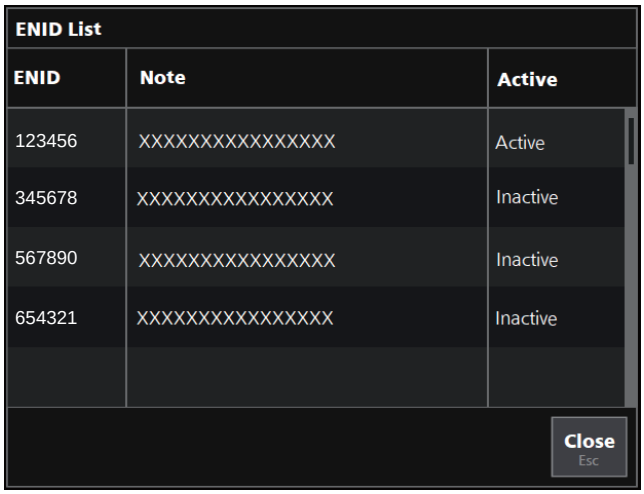
4. Select the button (space bar) in [Active] to turn the ENID on (active) or off (inactive).
5. Select [Apply] (**Enter**) to confirm the selection.

ENID list

You can check the status of the ENIDs.

Note: This function is available when [Operation Mode] is set to [EGC Only] ("Current Status: EGC RECEIVER").

1. Select the  (MSI) icon (**F11**) at the bottom left corner of the display.
2. Select the [MSI(EGC)] tab.
3. Select [ENID List] (**Alt** + **L**).



4. Select [Close] (**Esc**) to close the [ENID List] window.

4.4.3 How to receive EGC distress or urgency messages

When the FELCOM20 receives an EGC distress or an urgency message, the audio alarm sounds from its terminal unit, the Distress Alert/Received Call Unit IC-305 and Alarm Unit IC-350. To silence the alarm, do the following:

FELCOM20: Press the **SILENCE** key, the **F10** key on the keyboard, or select [ACK] (**Enter**) on the pop-up message window.
IC-350: Press the **MUTE ALARM** button.

4.4.4 How to display the EGC message log

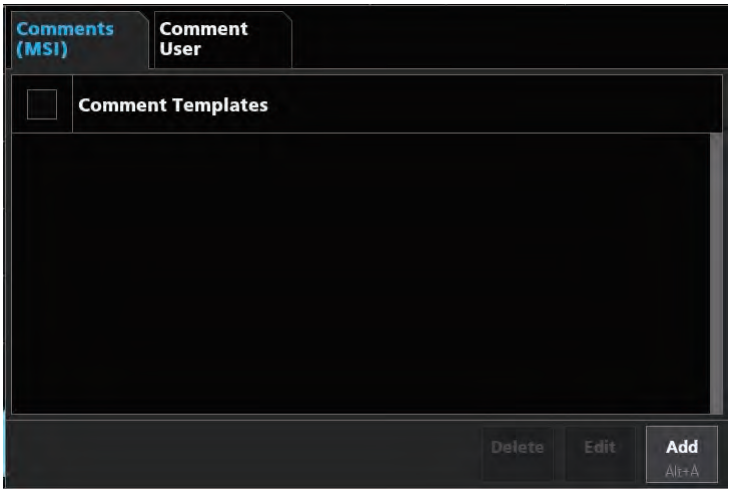
See subsection 4.3.1.

4.4.5 How to set a comment and personal code in advance

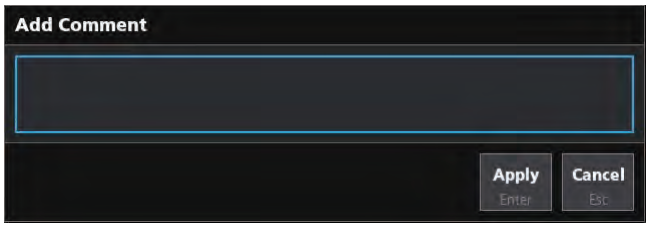
To enter a comment for EGC messages in the next subsection, set your personal code in advance. Also, you can register comments in advance.

Note: The [EGC] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Comment & User].
3. Select the [Comments (MSI)] tab.

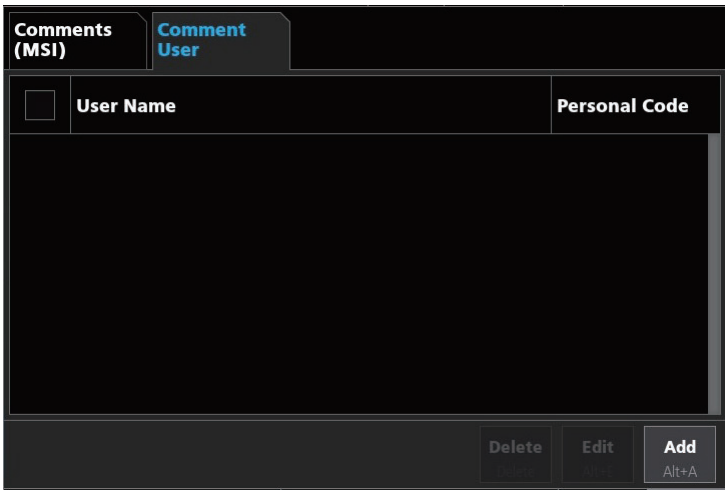


4. Select [Add] (**Alt** + **A**) to open the [Add Comment] window.

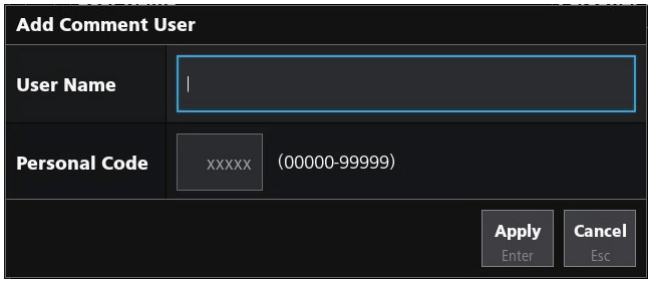


5. Enter the comment in the comment input field.
6. Select [Apply] (**Enter**) to confirm the comment.
   Note: For keyboard operation, this procedure cannot be done while the cursor is in the comment input field. Use the **Tab** key to move the cursor out of the comment input field.

7. Select the [Comments User] tab.



8. Select [Add] (**Alt** + **A**) to open the [Add Comment User] window.



9. Select [User Name], then enter the user name.
10. Select [Personal Code], then enter the personal code in five digits.
11. Select [Apply] (**Enter**) to confirm the setting.

How to edit comments/personal codes (user names)

To edit a comment, select it, then select [Edit] (**Alt** + **E**) on the [Comments (MSI)] tab to open the [Edit Comment] window. Edit the comment referring to steps 5 to 6 above.

To edit a personal code (user name), select it, then select [Edit] (**Alt** + **E**) on the [Comments User] tab to open the [Edit Comment User] window. Edit the personal code (user name) referring to steps 9 to 11 above.

How to delete comments/personal codes (user names)

To delete a comment, select it, then select [Delete] (**Delete**) on the [Comments (MSI)] tab. The confirmation message "Delete the selected item(s). Are you sure?" appears. Select [OK] (**Enter**).

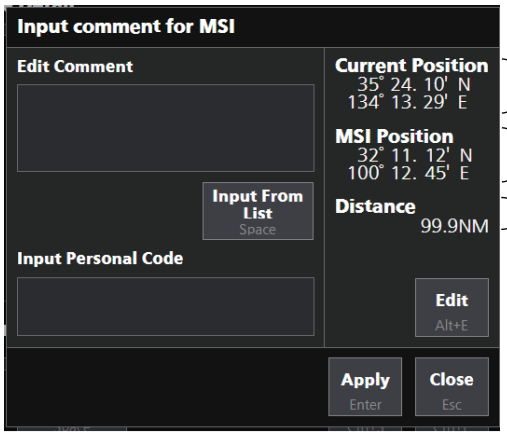
To delete a personal code (user name), select it, then select [Delete] (**Delete**) on the [Comments User] tab. The confirmation message "Delete the selected item(s). Are you sure?" appears. Select [OK] (**Enter**).

4.4.6 How to enter a comment for EGC messages

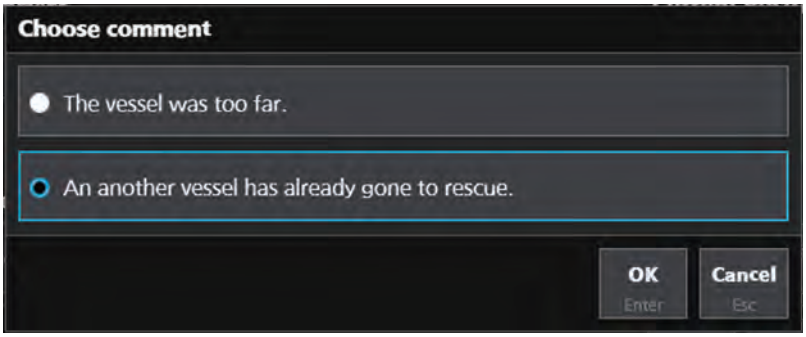
To comment about an EGC message, follow the procedure below.

1. Select the  (MSI) icon (**F11**) at the bottom left corner of the display.
2. Select the [MSI(EGC)] tab.

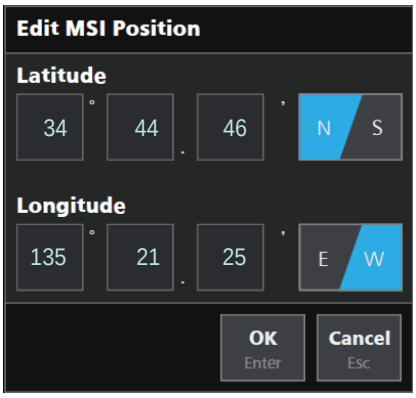
3. Select a message, then select [Select] (**Enter**) to open the [Message Details] window.
4. Select [Comment] (**Alt** + **C**) to open the [Input comment for MSI] window.



5. Select [Edit Comment], then enter the comment. To select a prepared comment (see subsection 4.4.5), select [Input From List] (**Alt** + **I**) to open the [Choose comment] window. Select the comment, then select [OK] (**Enter**).



6. Select [Input Personal Code], then enter the personal code set in subsection 4.4.5.
7. To edit the MSI position*, select [Edit] (**Alt** + **E**) to open the [Edit MSI Position] window.
   *: For example, in the case of a distress alert, enter the location of the distress as a memo.



8. Select [Latitude], then enter latitude. Select [N] or [S] as appropriate.
9. Select [Longitude], then enter longitude. Select [E] or [W] as appropriate.
10. Select [OK] (**Enter**).

11. Select [Apply] (**Enter**) to confirm the selection and close the [Input comment for MSI] window. The input comment is displayed in [Comment] of the [Message Details] window.
    Note: When an invalid personal code is input, the notification message "Invalid user code. Check credentials." appears. The input comment is not reflected in [Comment].
12. Select [Close] (**Esc**) to close the [Message Details] window.

4.4.7 How to save EGC messages

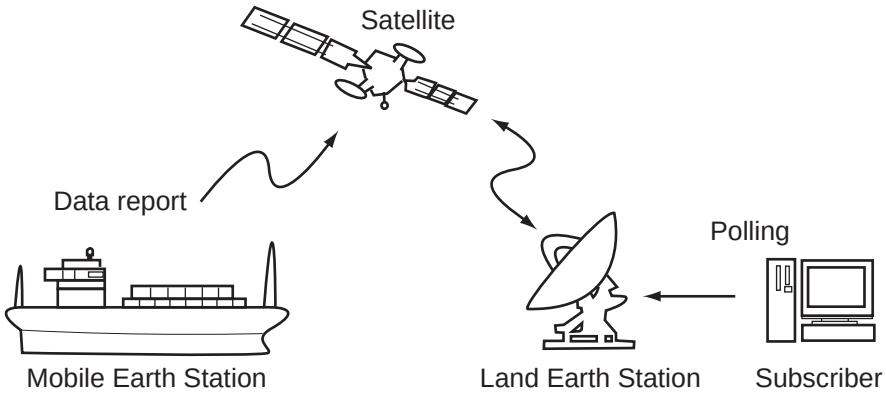
To save the EGC message to the user data, select save icon (**Ctrl** + **S**) on the [Message Details] window.

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5. DATA REPORT AND POLLING

This chapter provides the information necessary for data reporting and polling reception. Data reporting provides automatic data transmission at regular intervals from your ship to your home office. When your ship receives a polling command from your home office; that is, a request for navigation data from your ship, it automatically transmits this data to your home office.

No operator intervention is required during polling reception.



5.1 Data Reporting

Data reporting provides automatic data transmission at predetermined intervals from your ship to your home office. The data are position, speed, bearing and other data sent from a navigator or an interface unit.

The data transmitted from the FELCOM20 is temporarily stored in a data reporting file at the LES. When an operator at your home office accesses the LES, the LES delivers the data to your home office. Some LESs may deliver it without being accessed.

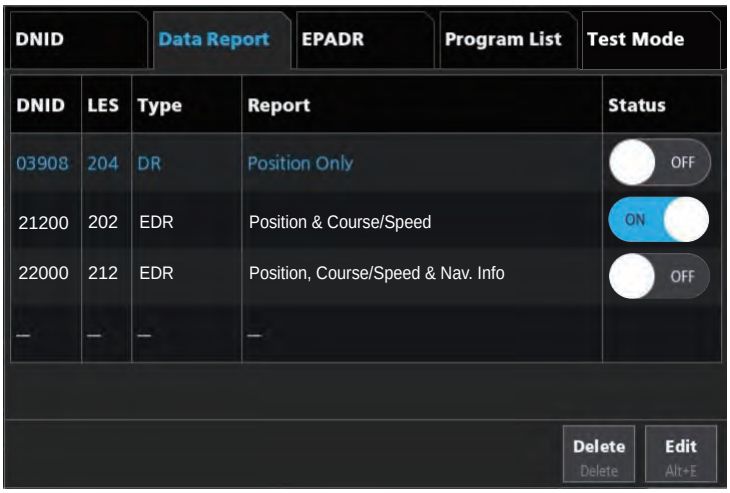
Data reporting can be initiated by setting a data report on the FELCOM20 or receiving a polling command from your home office.

This FELCOM20 offers data report (on MES signaling channel).

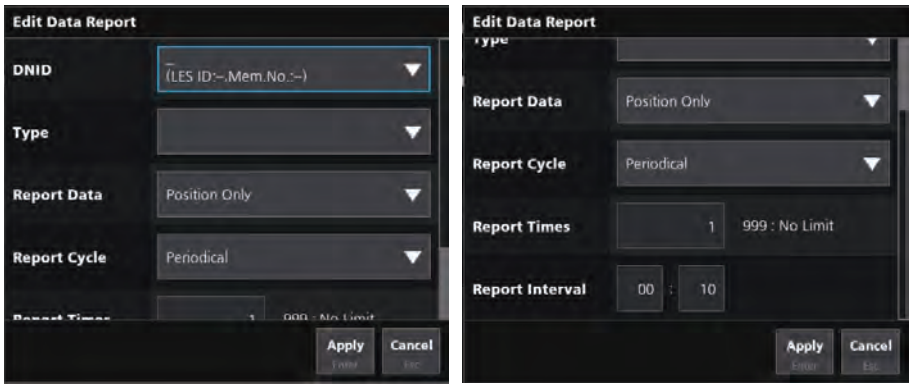
5.1.1 How to prepare data reports

Note: The [Data Report] menu requires administrator access rights.

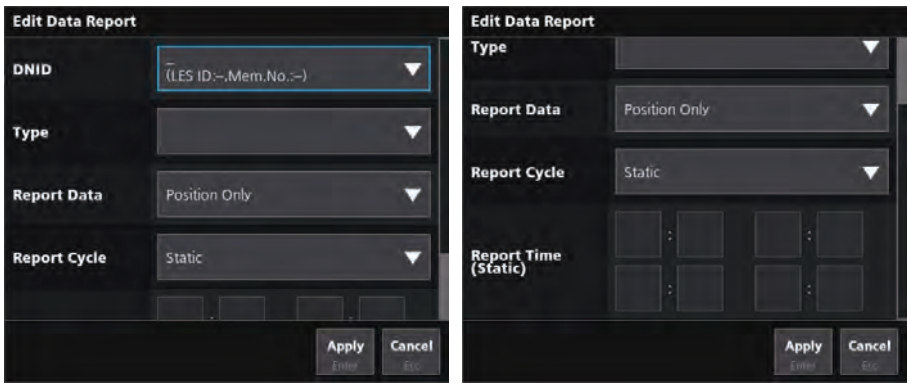
1. Open the [Admin] menu referring to section 2.8.
2. Select [Data Report].
3. Select the [Data Report] tab. Up to four DNIDs (see section 5.3) can be set.



4. Select one DNID, then select [Edit] (**Alt** + **E**) to open the [Edit Data Report] window.

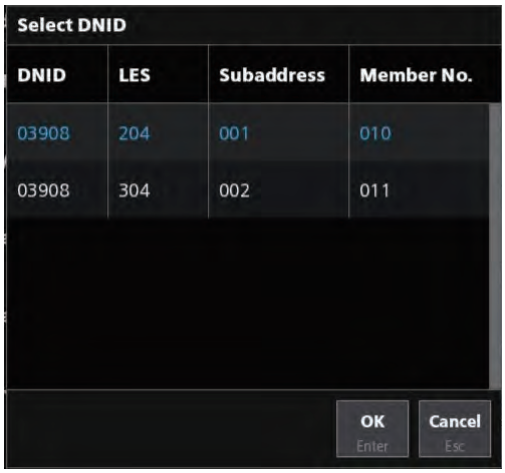


When [Report Cycle] is set to [Periodical]

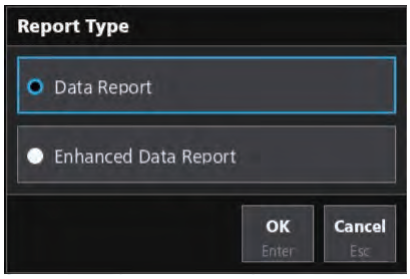


When [Report Cycle] is set to [Static]

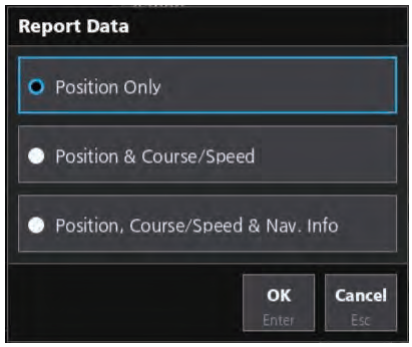
5. Select [DNID] to open the [Select DNID] window.



6. Select the DNID, then select [OK] (**Enter**). ([LES ID] and [Mem.No.] are automatically selected according to DNID.)
7. Select [Type] to open the [Report Type] window.

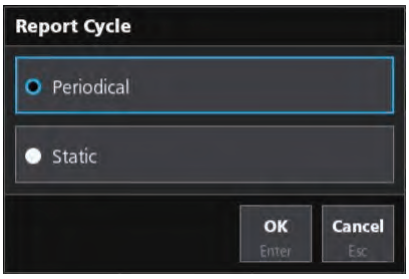


8. Select [Data Report] or [Enhanced Data Report], then select [OK] (**Enter**).
   [Data Report]: Standard data report.
   [Enhanced Data Report]: Data report w/confirmation.
   For assured transmission, select [Enhanced Data Report].
9. Select [Report Data] to open the [Report Data] window.



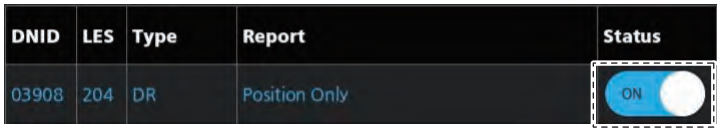
10. Select the data to transmit, then select [OK] (**Enter**).
    [Position Only]: Own ship's position.
    [Position & Course/Speed]: Own ship's position, course, and speed.
    [Position, Course/Speed & Nav. Info]: Own ship's position, course, speed, water temperature, tide, and depth.

11. Select [Report Cycle] to open the [Report Cycle] window.

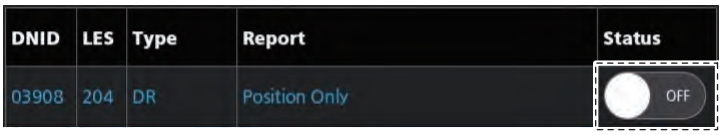


12. Select [Periodical] or [Static], then select [OK] (**Enter**).
13. Do one of the following depending on selection in step 12.
    [Periodical]
    1) Set the report times (the number of transmissions) in [Report Times].
    2) Set the time interval in [Report Interval].

    [Static]
    Set the start time in [Report Time (Static)] (up to four). When setting four start times, the data is sent 4 times daily at the set time.
14. Select [Apply] (**Enter**). The notification message "Completed." appears.
15. Select the [Status] button (space bar) for the selected DNID on the [Data Report] tab to turn on (enabled)/off (disabled).



ON



OFF

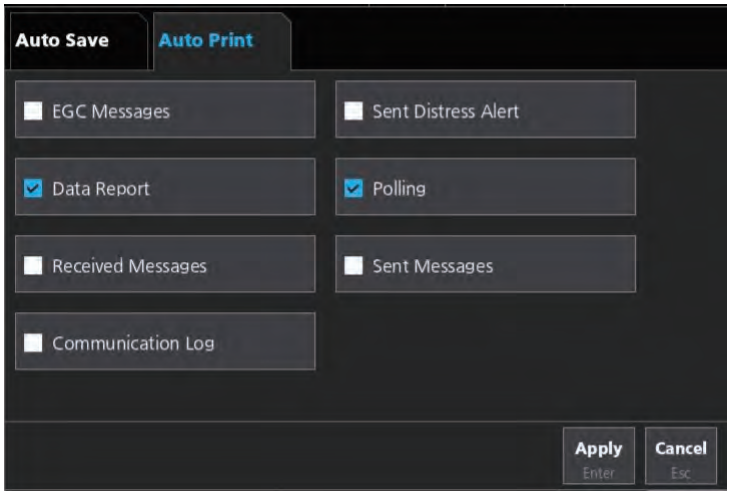
To delete a DNID, select the DNID, then select [Delete] (**Delete**) on the [Data Report] tab. The confirmation message "Delete the selected item(s). Are you sure?" appears. Select [OK] (**Enter**).

5.1.2 How to automatically print data report, polling command

Note: The [Auto Save/Print] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Auto Save/Print].

3. Select the [Auto Print] tab.



4. Turn on (✓) [Data Report] and [Polling] to automatically print the data report and the polling command.
5. Select [Apply] (**Enter**) to confirm the selection.

5.2 Polling

When the FELCOM20 receives a polling command from your home office, it automatically transmits data to your home office. The data are position, speed, bearing and other data sent from a navigator or an interface unit.

A polling command from your home office can also activate a data report if the corresponding setting is completed on the FELCOM20. If a polling command with a file name is received, the FELCOM20 transmits the file to your home office.

5.2.1 Polling commands

This section shows you how to make the polling command on the MES signaling channel at your home office.

When a polling command is received from your home office, your vessel's coordinates (position), bearing and speed can be sent automatically as a data report.
The available polling commands are:

- Send a report to the ship once only.
- Send a report to the ship at regular intervals.
  (A program cycle report dependent on the polling command.)

The table below shows the type of the polling commands.

Command Type	Meaning	Polling Type
00H	Send Unreserved Report as required in Response.	Any (Individual, Group, Area Polling)
01H	Program Reserved Data Reporting.	Individual
02H	Initiate Reserved Data Reporting.	Any (Individual, Group, Area Polling)
03H	Stop Reserved Data Reporting.	Any (Individual, Group, Area Polling)

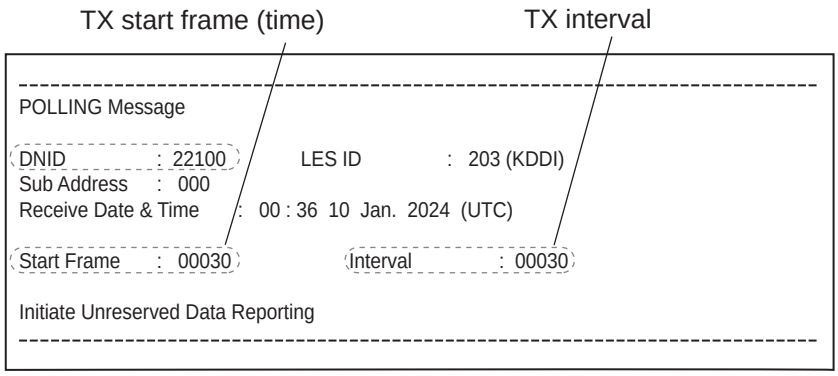
Command Type	Meaning	Polling Type
04H	Program Unreserved Data Reporting.	Any (Individual, Group, Area Polling)
05H	Initiate Unreserved Data Reporting.	Any (Individual, Group, Area Polling)
06H	Stop Unreserved Data Reporting.	Any (Individual, Group, Area Polling)
0AH	Download DNID.	Any (Individual, Group, Area Polling)
0BH	Delete DNID.	Individual

Note: The polling command differs according to land earth station. Contact the land earth station directly for details.

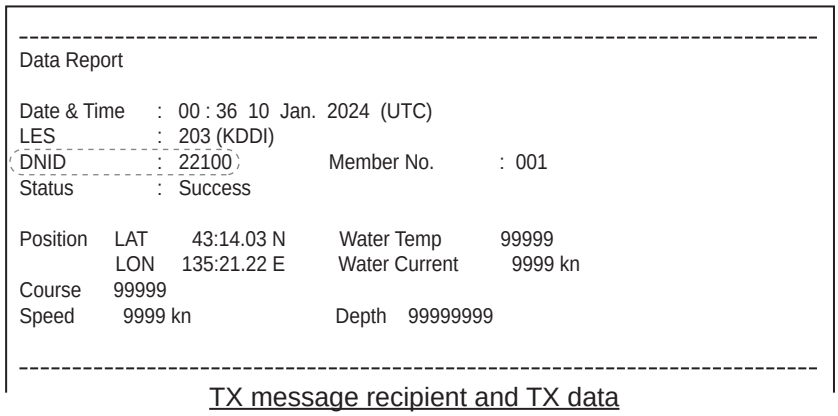
5.2.2 Polling reception

No operator intervention is required during polling reception.

The printer (PP-520: option) prints the status of polling reception and transmits data in response to polling request as shown below.



Received Polling command



TX message recipient and TX data

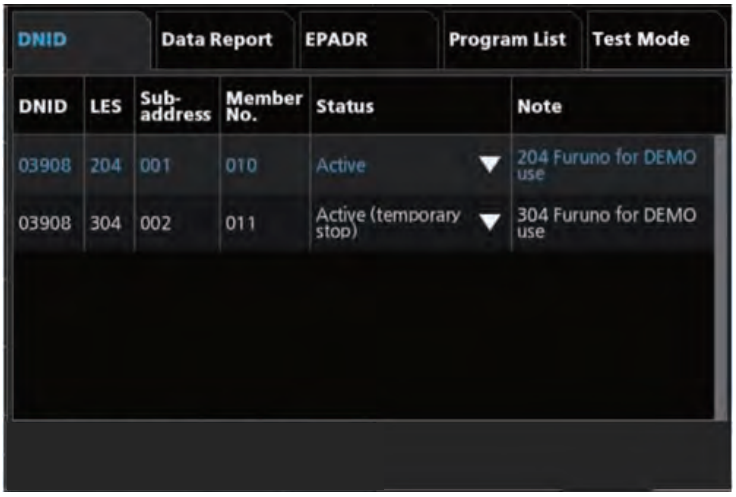
5.3 DNID (Data Network Identification)

You need to make a contract with an LES to exchange data within a group. The LES sends a DNID number to each member of the group. The FELCOM20 can store a maximum of 64 DNIDs.

5.3.1 How to display DNIDs

Note: The [Data Report] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Data Report].
3. Select the [DNID] tab.



Item	Meaning
[DNID]	Data network ID
[LES]	Land earth station
[Subaddress]	Sub address
[Member No.]	DNID member number
[Status]	Sending status for data report
[Note]	Text registered by DNID administrator

5.3.2 How to enable, disable DNIDs

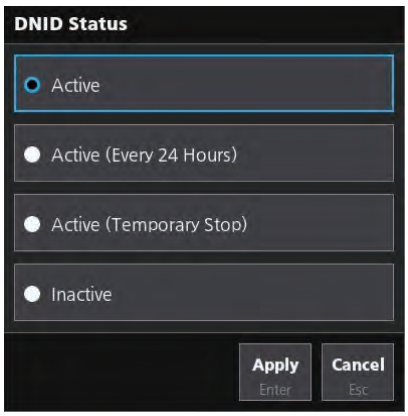
Note: The [Active (every 24 hours)], [Active (temporary stop)], and [Inactive] settings are for LRIT only. Only use these settings with a DNID for LRIT.

1) When anchored or docked, the [Active (every 24 hours)] and [Active (temporary stop)] settings can be used to temporarily stop or send 24-hour interval reports.
2) When the setting is changed from [Active (every 24 hours)] or [Active (temporary stop)] to [Active], reports are sent at 6-hour intervals again. Where DNID is set to a DNID other than for LRIT and [Active (every 24 hours)] or [Active (temporary stop)] is selected, change the setting to [Active] then ask the administrator for a compatible DNID for LRIT and request a polling command from the land station.
3) The interval reports can be stopped by selecting [Inactive]. Interval reports will not be sent after reverting the setting to [Active]. To reinstate the interval reports, change the setting to [Active] then ask the administrator for a compatible DNID for LRIT and request a polling command from the land station. Where the DNID is not

compatible with LRIT, follow the procedure mentioned above, even when selecting [Inactive].

A DNID can be active or inactive as follows.

1. Do the procedures in subsection 5.3.1.
2. Select the DNID, then select ▼ (space bar) on the [Status] item to open the [DNID Status] window.



3. Select the status, then select [Apply] (**Enter**).
   [Active]: DNID active.
   [Active (Every 24 Hours)]: DNID active (TX cycle changes every 24 hours).
   [Active (Temporary Stop)]: DNID active (TX temporarily stopped).
   [Inactive]: DNID inactive.

5.4 EPADR (Enhanced Pre-Assigned Data Reporting)

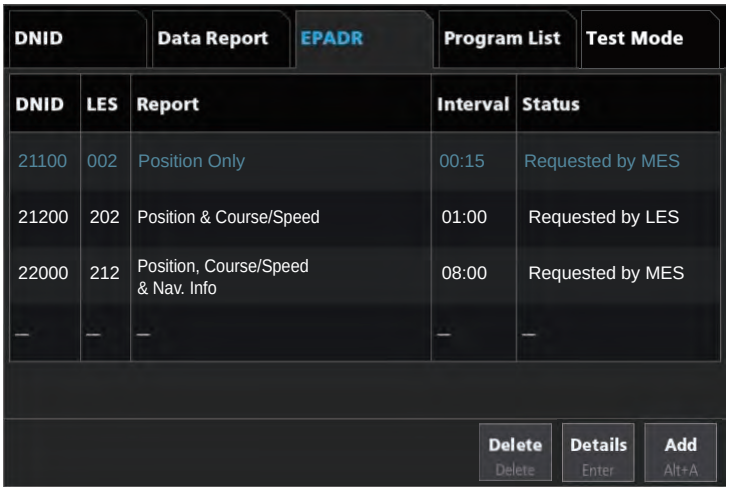
EPADR increases the efficiency of maritime data reporting, allowing vessels using satellite services to reliably send position reports and comply with the International Maritime Organization's (IMO) new Long Range Identification and Tracking (LRIT) regulations.

How to prepare data reports

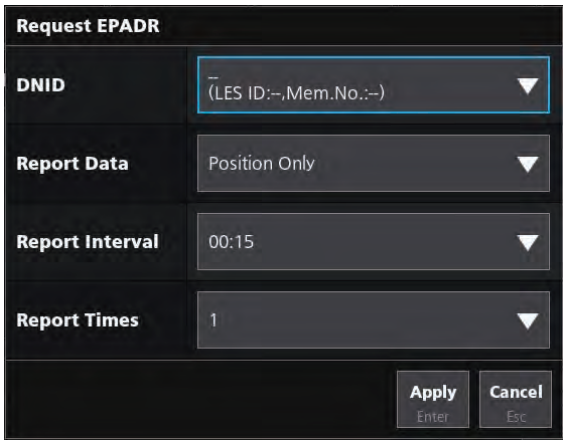
Note: The [Data Report] menu requires administrator access rights.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Data Report].

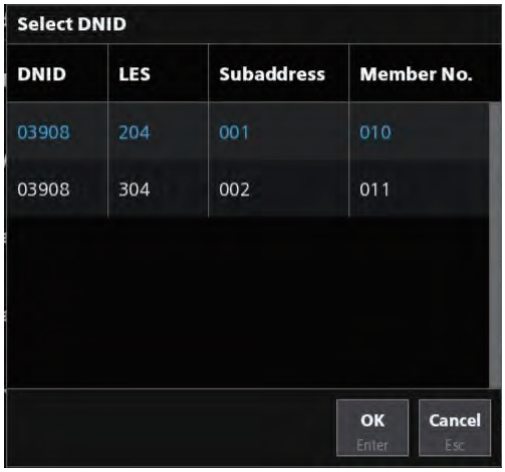
3. Select the [EPADR] tab.



4. Select [Add] (**Alt** + **A**).
   Note: When four DNIDs are registered, this function is not available. To add a new DNID, select the unnecessary DNID, then select [Delete] (**Delete**).

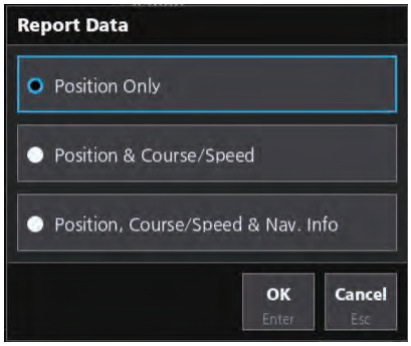


5. Select [DNID] to open the [Select DNID] window.

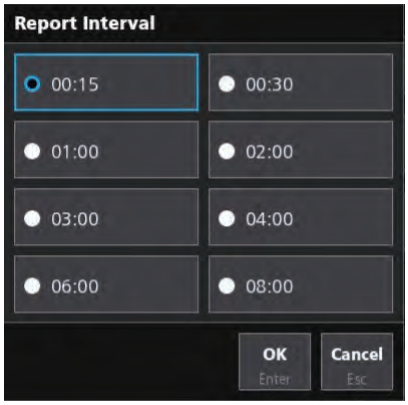


6. Select the DNID, then select [OK] (**Enter**). ([LES ID] and [Mem.No.] are automatically selected according to DNID.)

7. Select [Report Data] to open the [Report Data] window.



8. Select the data to transmit, then select [OK] (**Enter**).
   [Position Only]: Own ship's position
   [Position & Course/Speed]: Own ship's position, course, and speed
   [Position, Course/Speed & Nav. Info]: Own ship's position, course, speed, water temperature, tide, and depth
9. Select [Report Interval] to open the [Report Interval] window.



10. Select the interval (hour:minute), then select [OK] (**Enter**).
11. Select [Report Times] to open the [Report Times] window.



12. Select the number of times to transmit, then select [OK] (**Enter**).
13. Select [Apply] (**Enter**) to confirm the selection.

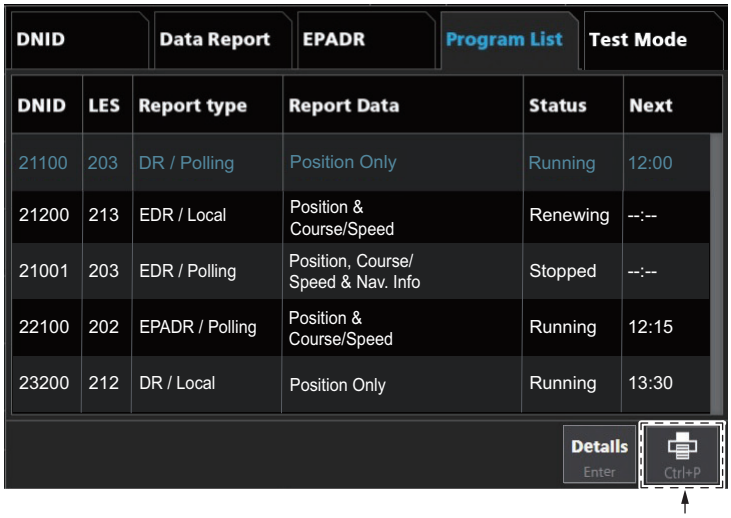
To display the detail information for the EPADR, select the DNID, then select [Details] (**Enter**).

5.5 Data Reporting List

The data for registered data reports are displayed in the [Program List].

Note: The [Data Report] menu requires administrator access rights.

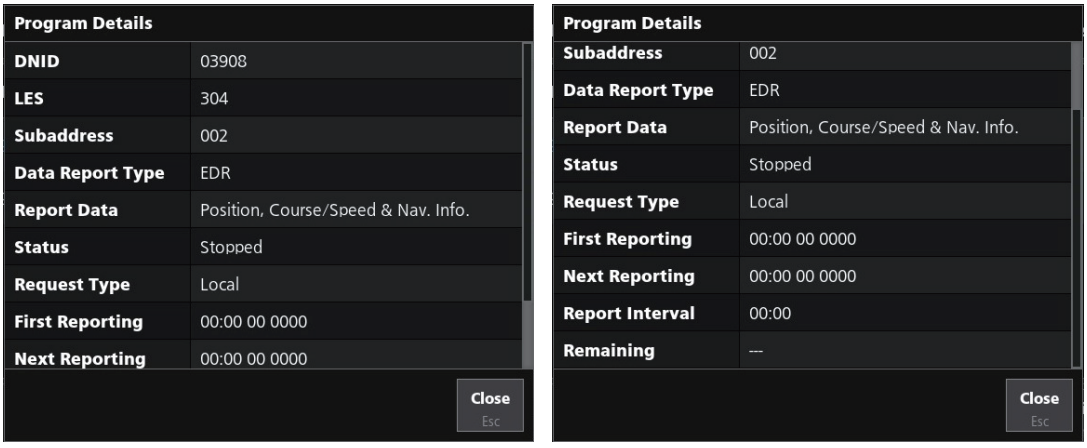
1. Open the [Admin] menu referring to section 2.8.
2. Select [Data Report].
3. Select the [Program List] tab.



Item	Meaning
[DNID]	Data network ID
[LES]	Land earth station ID
[Report type]	Type and request type for data report
[Report Data]	Data for reporting
[Status]	Sending status for data report
[Next]	Next send time

To print the registered data reports list, select the print icon (**Ctrl** + **P**).

To display the detail information for the data report, select the data report, then select [Details] (**Enter**).



Item	Meaning
[DNID]	Data network ID
[LES]	Land earth station ID

Item	Meaning
[Subaddress]	Sub address
[Data Report Type]	Type for data report
[Report Data]	Data for reporting
[Status]	Sending status for data report
[Request Type]	Request type for data report
[First Reporting]	Date and time the data report is first sent.
[Next Reporting]	Date and time the data report is next sent.
[Report Interval]	Transmission interval (hour:minute) for data report
[Remaining]	Remaining number of transmissions for data report

5.6 LRIT Compliance

5.6.1 LRIT overview

This equipment can function as a marine communications terminal for the LRIT (Long-Range Identification and Tracking) system, as prescribed by the IMO resolution MSC.202(81). The LRIT uses the FELCOM20's Data Report/Polling feature for LRIT position reporting.

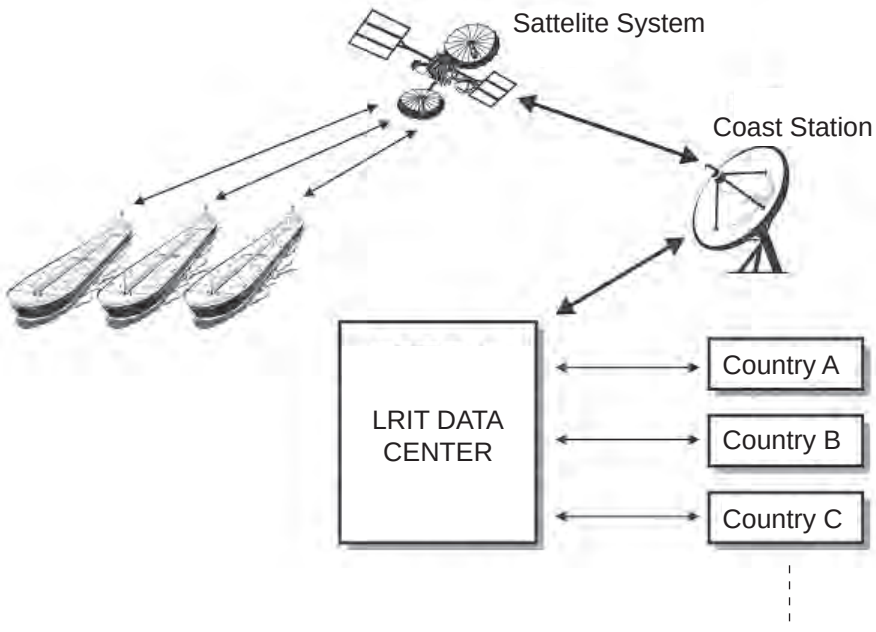
The LRIT system is fully automatic, thus no operation is required of the user. However, follow the guidelines shown below to use this equipment as an LRIT device.

The data listed below is sent by the FELCOM20 when it receives a command from the LRIT data center.

- ID number of this equipment
- Position of your ship
- Time of position

The FELCOM20 sends data at intervals between 15 minutes and 6 hours.

The FELCOM20 automatically receives commands (related to time of position reporting, transmission interval) from the LRIT data center. To receive the commands at all times, keep the equipment powered and logged in.



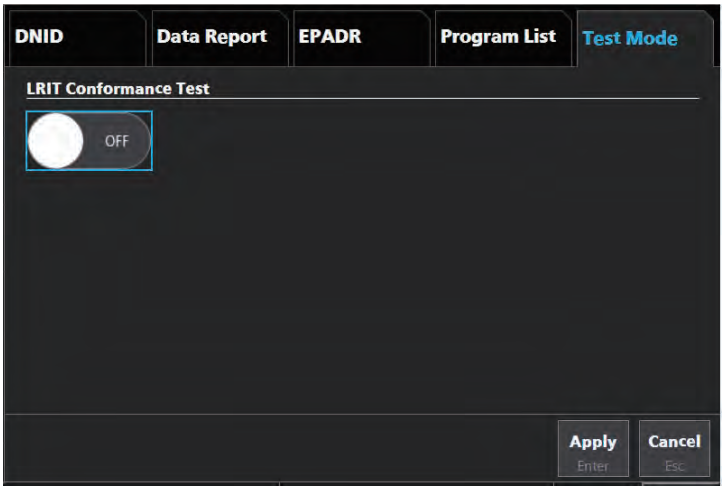
5.6.2 About the LRIT system

- Power the equipment and keep it logged in at all times except for special occasions such as when the ship is dry-docked for repairs. Position information is automatically sent at fixed intervals, thus no operation is required. However, keep the equipment in a ready state to receive commands from the LRIT data center. Combined use for routine messages, distress messages and SSAS (Ship Security Alert System) is possible.
- The source of position data for this equipment can be its internal GPS receiver or external GNSS (Global Navigation Satellite System) equipment. For GNSS equipment, interface directly to the shipborne global navigation satellite system equipment.
- If external GPS equipment is used, set it to use WGS84 datum. Further, the output sentences should minimally be as follows:
  - Time data input: ZDA
  - Position data input: RMC or GGA and VTG (pair)
- This equipment and external GNSS equipment must be powered in the following manner.
  - If the above equipment is used as a GMDSS device also, connect them to an auxiliary power source (radio communications battery).
  - If the above equipment is not used as a GMDSS device, connect them to both main and emergency power sources (via AC/DC Power Supply Unit PR-241).
- If an alert message appears on the notice area, take the necessary measures to restore normal operation as soon as possible. Check the alert list for alert messages. Shown below are representative alerts.
  - **"External NAV equipment failure."** Position data is not input from the external GNSS equipment. Check the GNSS equipment and the wiring between it and the FELCOM20.
  - **"Internal GNSS UNIT failure."** Position data is not input from the internal GNSS receiver. If this alarm occurs frequently, contact your dealer.
  - **"Common channel synchronization failed/lost."** Check the current Ocean Region.
  - **"BBER over 80%."** Problem with receiving the Inmarsat C signal. Check if the current sea area is suitable for your position. If it is not, change the sea area. If the area is suitable and the alarm continues, check the antenna and antenna cable. Contact your dealer if the problem persists.

5.6.3 How to operate with the LRIT test mode

Note: The [Data Report] menu is available with the administration right.

1. Open the [Admin] menu referring to section 2.8.
2. Select [Data Report].
3. Select the [Test Mode] tab.



4. Turn [LRIT Conformance Test] on (space bar).
5. Select [Apply] (**Enter**). The message "Ready to conduct LRIT Conformance Test. Return this setting to normal operation after completing the test." appears.
6. Select [OK] (**Enter**). The notification message "Completed." appears.

6. DISTRESS OPERATIONS

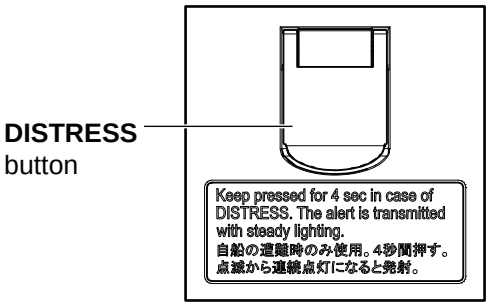
For the Ship Security Alert System (SSAS) IC-307, see chapter 9.

6.1 How to Send the Distress Alert

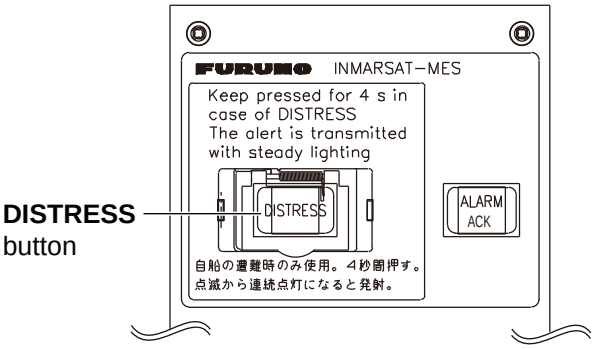
Set the LES where to send the distress alert, referring to steps 1 to 3 in section 6.2.

When a life-endangering situation arises on your vessel and you do not have the time to specify the nature of distress, do the following to send the distress alert to an LES without specifying the nature of distress.

1. Open the cover of the **DISTRESS** button on the Terminal Unit IC-220, or the Distress Alert/Received Call Unit IC-305.



Terminal Unit IC-220

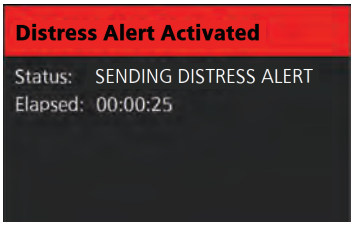


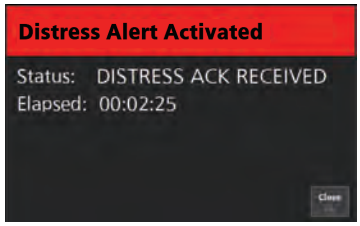
Distress Alert/Received Call Unit IC-305

2. Press and hold the **DISTRESS** button (approx. four seconds) until the lamp in the button lights continuously. While pressing the button, an audio alarm sounds and the message "Distress Button Pressed" (black characters on red background) appears on the screen. When the distress alert is sent, the audio alarm stops and the lamp in the button lights continuously.



The message "Distress Alert Activated" (black characters on red background) appears on the screen while the distress alert is being sent. The status is "SENDING DISTRESS ALERT". Wait for acknowledgment of distress from LES, which takes from 30 seconds to 10 minutes. When you receive acknowledgment of the distress alert from the LES, the status changes to "DISTRESS ACK RECEIVED". To silence the audio alarm, press the **SILENCE** key on the terminal unit, the **F10** key on the keyboard, or select [Close] (**Esc**) on the pop-up message window.

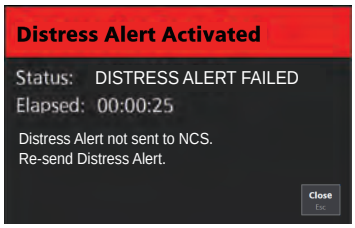




The state of the LED in the **DISTRESS** button and the buzzer change according to the events in the distress transmission sequence.

Event in distress TX sequence	LED state	Buzzer state
Idle	OFF	OFF
Button pressed	500 ms ON, 500 ms OFF	500 ms ON, 500 ms OFF
Distress TX	Lighting	OFF
Distress ACK	500 ms ON, 500 ms OFF	Continuous

When sending the distress alert fails, the status changes to "DISTRESS ALERT FAILED". The elapsed time stops and the failure message is displayed.

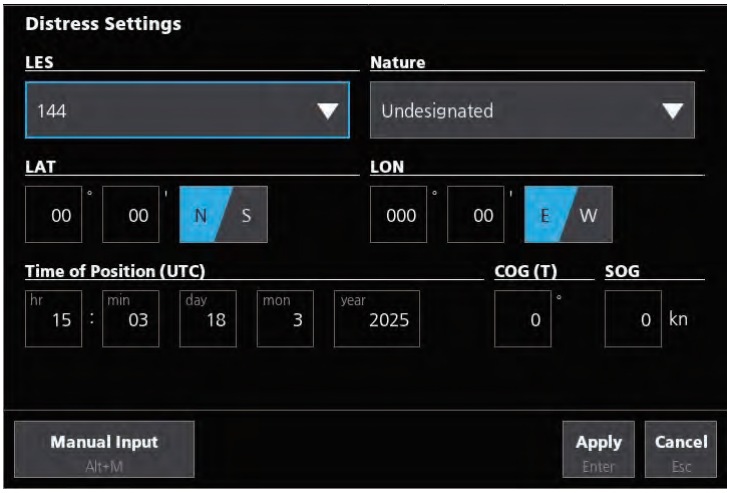


The **DISTRESS** button on the terminal unit of the FELCOM20, or the Distress Alert/ Receive Call Unit IC-305 cannot be used to silence the audio alarm for incoming distress or EGC urgency broadcast. ***The DISTRESS button is for sending a distress alert for own ship. It cannot be used to silence the audio alarm. Use the SILENCE key on the terminal unit or the F10 key on the keyboard to silence the audio alarm.***

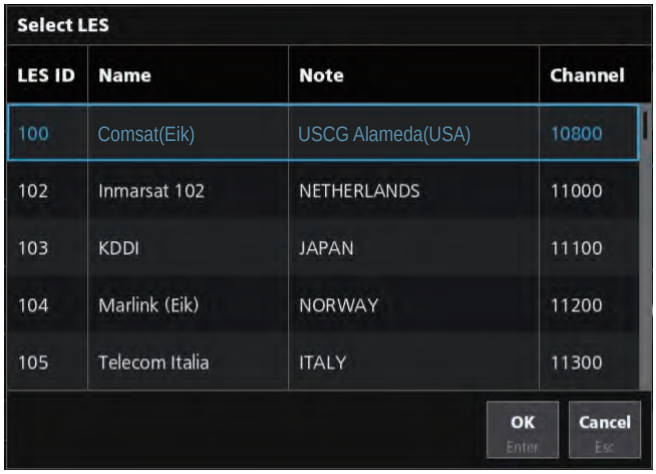
6.2 How to Send the Distress Alert with Nature of Distress Specified

When a life-endangering situation arises on your vessel and there is time to specify the nature of distress and the recipient (LES) of the distress alert, send own ship data (position, time, speed and course) as follows.

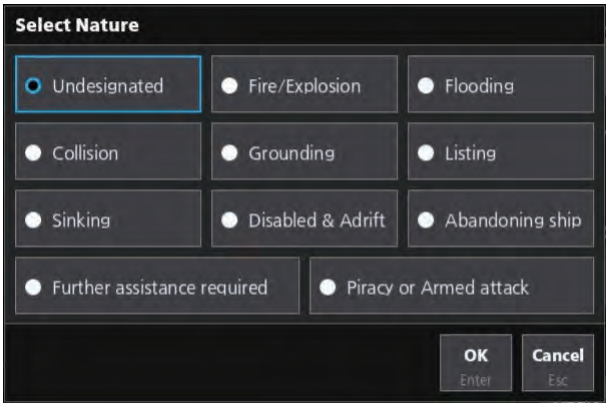
1. Select [Distress] (**F5**) to open the [Distress Settings] screen.



2. Select [LES] to open the [Select LES] window.



3. Select the LES, then select [OK] (**Enter**).
4. Select [Nature] to open the [Select Nature] window.



5. Select the nature of distress, then select [OK] (**Enter**). If the nature of distress is not specified, [Undesignated] is automatically selected.
   When manually inputting the latitude, longitude, time of position, COG, and SOG, go to the next step.
6. Select [Manual Input] (**Alt** + **M**). The countdown indication appears for three minutes as shown in the right-hand figure.
   Note: Selecting [Manual Input] (**Alt** + **M**) in manual mode resets the counter to three minutes and restarts it.



7. Select [LAT], then enter your current position in latitude. Select [N] or [S] for appropriate coordinate.
8. Select [LON], then enter your current position in longitude. Select [E] or [W] for appropriate coordinate.
   Note: The latitude and longitude position entered here will be reflected after step 12 is completed.
9. Select [Time of Position (UTC)], then enter the current time.
   Note: When the latitude and longitude position is entered manually, the time of the position will be the time entered here.
10. Select [COG], then enter your course.
11. Select [SOG], then enter your speed.
12. Select [Apply] (**Enter**) to confirm the entries.
    Note 1: When latitude/longitude are input and saved manually, the confirmation message "Manually input LAT/LON is maintained for one hour or until a Distress

Call is sent, whichever is sooner. Navigational Data used in Distress Alerts is not automatically updated during this time. Are you sure?" appears. Select [OK] (**Enter**). The "*" marks appear next to [LAT], [LON], and [Time of Position (UTC)], and the message appears as shown in the figure below.



Note 2: If the time entered is more than 24 hours before the current system time, "Over 24 hours ago." appears. The colors for the input value in [LAT], [LON], and [Time of Position (UTC)] changes to red.

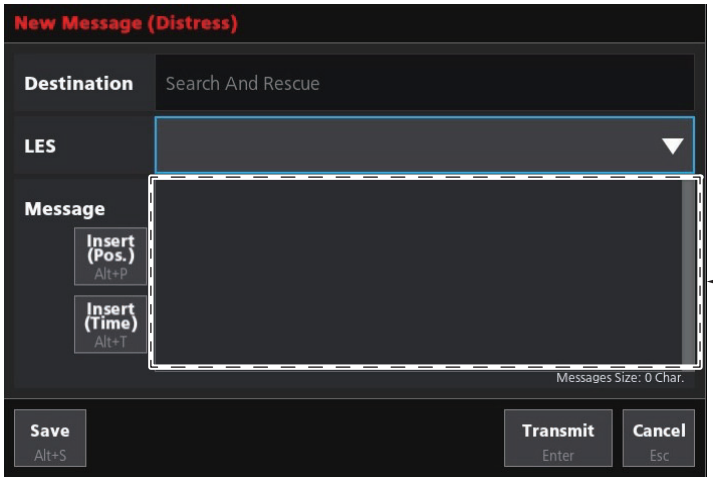
13. Open the cover of the **DISTRESS** button on the Terminal Unit IC-220, or the Distress Alert/Received Call Unit IC-305.
14. Press and hold the **DISTRESS** button (approx. four seconds) until the lamp in the button lights continuously. While pressing the button, an audio alarm sounds and the message "Distress Button Pressed" (black characters on red background) appears on the screen. When the distress alert is sent, the audio alarm stops and the lamp in the button lights continuously. The message "Distress Alert Activated" (black characters on red background) appears on the screen while the distress alert is being sent. The status is "SENDING DISTRESS ALERT". Wait for acknowledgment of distress from the LES, which takes from 30 seconds to 10 minutes. When the acknowledgment message of the distress alert is received from the LES, the status changes to "DISTRESS ACK RECEIVED", the lamp in the **DISTRESS** button flashes slowly and the audio alarm sounds intermittently. To silence the audio alarm, press the **SILENCE** key on the terminal unit, or the **F10** key on the keyboard.

The **DISTRESS** button on the terminal unit of the FELCOM20, or the Distress Alert/Receive Call Unit IC-305 cannot be used to silence the audio alarm for incoming distress or EGC urgency broadcast. ***The DISTRESS button is for sending a distress alert for own ship. It cannot be used to silence the audio alarm. Use the SILENCE key on the terminal unit, or the F10 key on the keyboard to silence the audio alarm.***

6.3 How to Prepare the Distress Message

The distress alert provides the minimum distress information: own ship's ID, speed, course, L/L position and nature of distress. After receiving the distress alert acknowledgment from the LES, and if there is no time pressure, send a distress message as described below to provide more detailed information.

1. Select [Message] (**F2**) to open the message screen.
2. Select [New MSG (Distress)] (**Alt** + **D**) to open the [New Message (Distress)] window.



3. Select [LES] to open the [Select LES] window.
4. Select the LES, then select [OK] (**Enter**).
5. Enter your message in the text area.
   Note: The number of characters for your message is displayed in [Message Size]. When the number of characters is more than 32,000 (16,000 in Russian mode), the message size is displayed in red.
6. To insert the current position, place the cursor where to insert the information in [Message], then select [Insert (Pos.)] (**Alt** + **P**).
7. To insert the current time, place the cursor where to insert the information in [Message], then select [Insert (Time)] (**Alt** + **T**).
8. Select [Transmit] (**Enter**). The confirmation message "Start transmission. Are you sure?" appears.
9. Select [OK] (**Enter**) to send the distress message to the message queue. (To escape, select [Cancel] (**Esc**).) The message "Completed." appears.

The message "Distress Message Call Activation" appears at the top right corner of the [Dashboard] screen while the distress message is being sent. When the acknowledgment message is received from the LES, the message "Distress Message Call Acknowledge" appears.

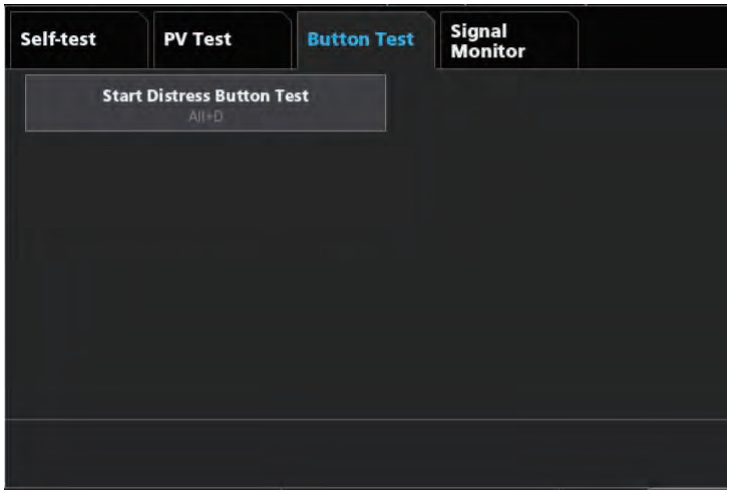
6.4 How to Automatically Print Distress Alert Message

1. Open the [Admin] menu referring to section 2.8.
2. Select [Auto Save/Print].
3. Select the [Auto Print] tab.
4. Turn on (✓) [Sent Distress Alert] to print the distress alert message automatically.
5. Select [Apply] (**Enter**) to confirm the selection.

6.5 How to Test the DISTRESS Button

The **DISTRESS** button on the terminal unit and the Distress Alert/Received Call Unit IC-305 may be tested as shown below without sending the distress signal. Note that the distress alert cannot be sent while testing the **DISTRESS** button.

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Diagnostics].
3. Select the [Button Test] tab.



4. Select [Start Distress Button Test] (**Alt** + **D**). The confirmation message "Start the distress button test. Are you sure?" appears.
5. Select [OK] (**Enter**). The [Distress Button(s) Test Mode] window appears.



6. Open the cover of the **DISTRESS** button on the Terminal Unit IC-220, or the Distress Alert/Received Call Unit IC-305.

7. Press and hold the **DISTRESS** button (approx. four seconds) until the lamp in the button lights continuously. The buzzer sounds and the following messages appear if the button is working properly.
   - Terminal Unit IC-220: "DISTRESS Button works correctly"
   - Distress Alert/Received Call Unit IC-305: "DISTRESS Alert Unit works correctly"
8. Close the **DISTRESS** button cover.
9. To escape from the test, select [Finish Test Mode] (**Enter**). The buzzer stops and the information message "Distress button returned to normal operation." appears.
10. Select [Close] (**Esc**) to close the message window.

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7. OTHER FUNCTIONS

This chapter describes the following operations.

- Abort operation
- Scan NCS
- Select EGC and NCS channels
- Display LES information

7.1 How to Abort an Operation

You can abort transmission, receiving or scanning (on the NCS common channel) as follows.

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Abort] to abort current operation.
   - When aborting transmission or reception, the confirmation message "Abort INMARSAT-C NW transmissions. Are you sure?" appears. Select [OK] (**Enter**) to abort the transmission or reception. "Processing…" appears on the screen for three seconds, then the [Dashboard] screen appears. [FORCED CLEAR] is displayed in [Current Status].
   - When aborting scanning, "Completed." appears, then the [Dashboard] screen appears.

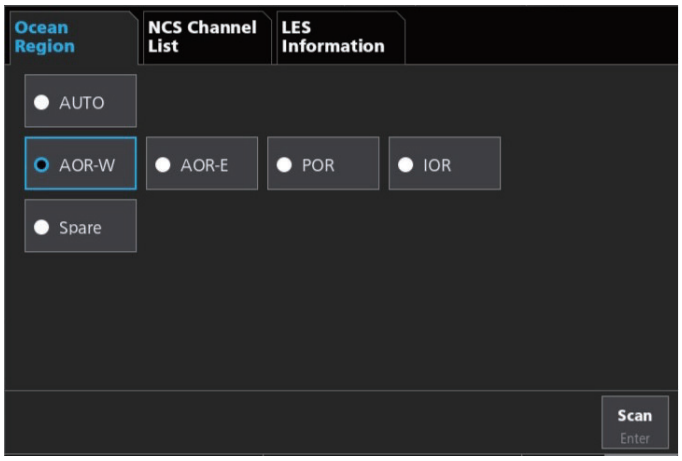
If aborting is attempted in modes other than those mentioned above, the notification message "Ignored: Can not abort current process." appears. Select [Close] (**Esc**) to close the message window.

7.2 How to Scan NCS Common Channels

Scanning is possible when the FELCOM20 is in idle state and its operation mode is set to [Inmarsat-C] (see subsection 3.1.2). If the FELCOM20 is not in idle state, the notification message "Ignored: MES is not idle." appears. Wait until the state changes to idle.

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Inmarsat-C Network Operation].

3. Select the [Ocean Region] tab.

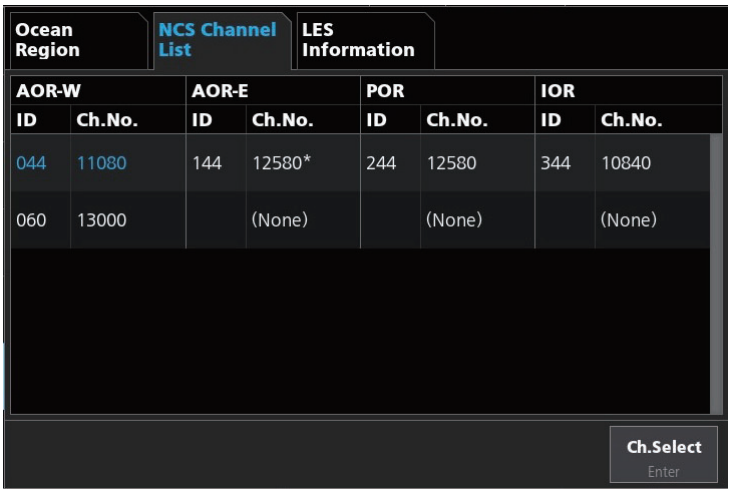


4. Select the ocean region other than the one currently in use, then select [Scan] (**Enter**). [AUTO] scans all regions in turn. The confirmation message "Start scanning. If a scan is in progress, the scan will be restarted. Are you sure?" appears.
5. Select [OK] (**Enter**) to start scanning.

7.3 How to Select NCS Channel

You may select an NCS common channel as shown below. Currently, each satellite sends one global beam. In the future, the satellites will transmit multiple spot beams. Namely, the NCS will have multiple channels.

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Inmarsat-C Network Operation].
3. Select the [NCS Channel List] tab.

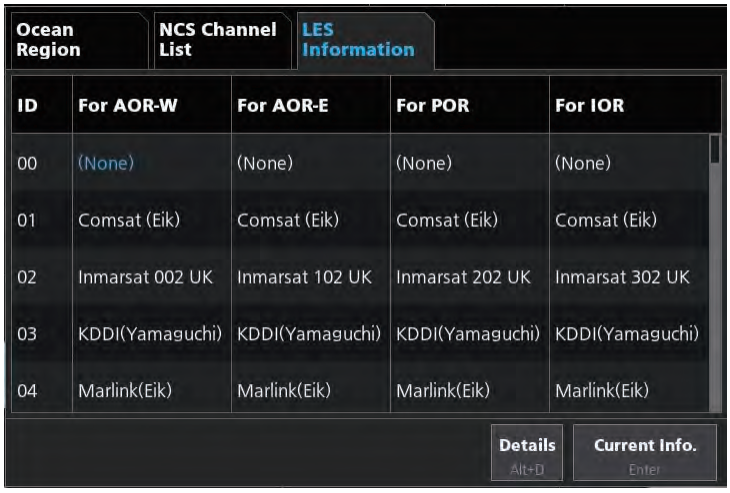


4. Select the channel, then select [Ch. Select] (**Enter**). The confirmation message "Switching channels. Are you sure?" appears.
5. Select [OK] (**Enter**) to switch channels.

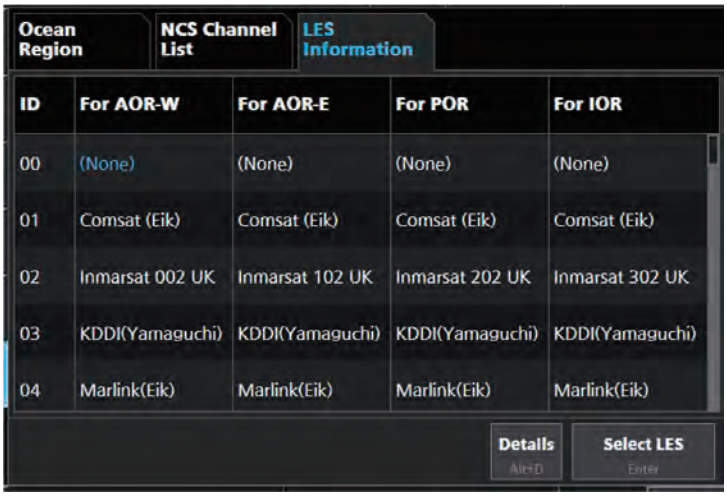
7.4 How to Find LES Information

Each time you log in, LES data is automatically downloaded through the NCS common channel to the FELCOM20, and saved to the [LES Information] screen. You may view this display as follows.

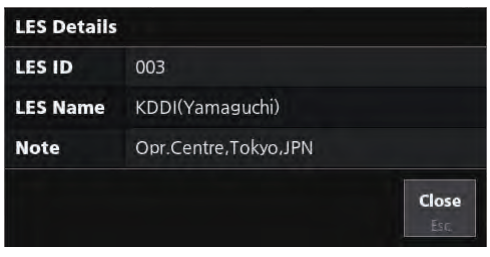
1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Inmarsat-C Network Operation].
3. Select the [LES Information] tab.



Note: When the communication network mode is "Restoration Mode (Network Update Received)" (see subsection 2.5.1), only usable LESs are selectable (see the figure below). [Select LES] (**Enter**) to open the [Select LES] window. Select the LES, then select [OK] (**Enter**).

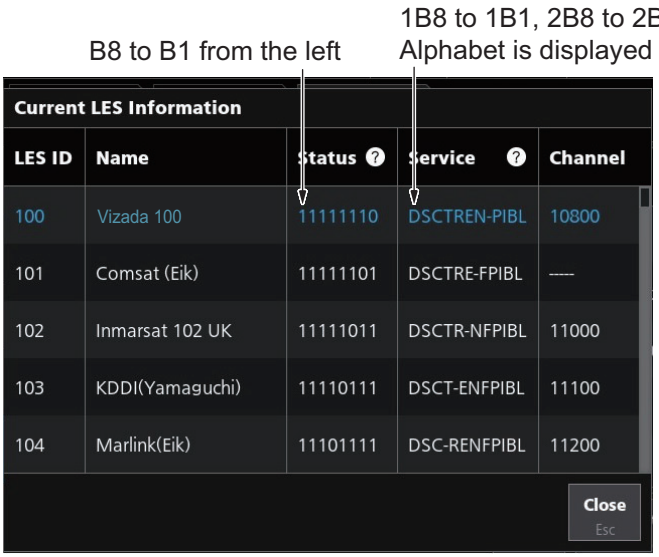


4. Select the LES, then select [Details] (**Alt** + **D**).



5. Select [Close] (**Esc**) to close the [LES Details] window.

6. Select [Current Info.] (**Enter**).



The question mark (?) to the right of [Status] and [Service] indicates that additional information is available. Tap the mark (space bar) to show the [Description of Status] (or [Description of Service]) window.

7. Select [Close] (**Esc**) to close the [Current LES Information] window.

Description of status

Bit No.	Status	Flag	Meaning
B8	Return link speed	1	600 bps
		0	300 bps
B7	Operational or spare satellite operation	1	Operational
		0	Spare
B6	LES status	1	In service
		0	Out of service
B5	LES status	1	Clear
		0	Congested
B4	For LES use	1	Terrestrial links open
		0	Terrestrial links closed
B3 - 1	Spare	1	No use.
		0	

Description of services

Bit No.	Flag	Meaning	Indication
1B8	1	Maritime distress alerting	D
	0	No maritime distress alerting	None
1B7	1	SafetyNET traffic	S
	0	No SafetyNET traffic	None
1B6	1	Inmarsat C traffic	C
	0	No Inmarsat C traffic	None
1B5	1	Store and forward	T
	0	No store and forward	None
1B4	1	Enhanced preassigned data reporting	R
	0	No enhanced preassigned data reporting	None
1B3	1	Enhanced data reporting	E
	0	No enhanced data reporting	None
1B2	1	Closed network	N
	0	No closed network	None

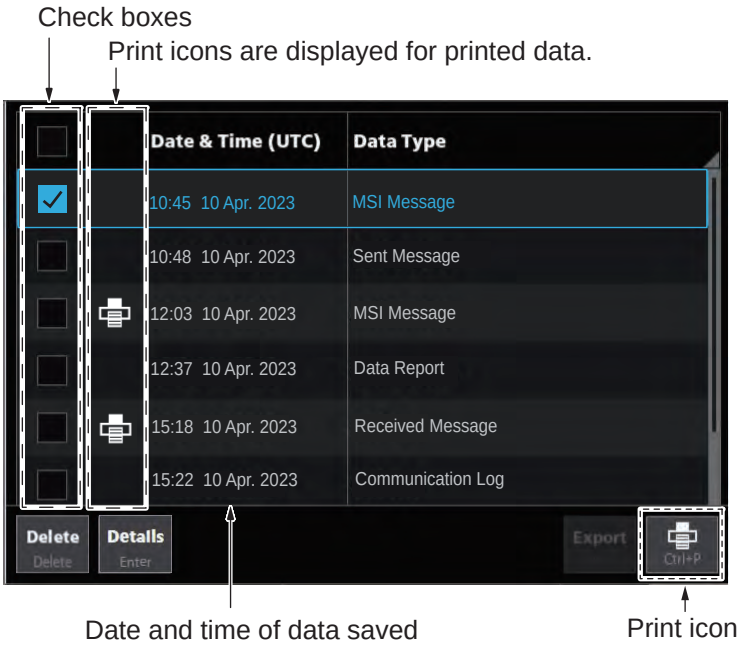
Bit No.	Flag	Meaning	Indication
1B1	1	FleetNET traffic	F
	0	No FleetNET traffic	None
2B8	1	Prefixed store and forward message supported	P
	0	Prefixed store and forward message not supported	None
2B5	1	ITA2 transmission supported	I
	0	ITA2 transmission not supported	None
2B4	1	Data transmission supported	B
	0	Data transmission not supported	None
2B3	No use		
2B2			
2B1	1	Low power C MES supported	L
	0	Low power C MES not supported	None

7.5 How to Operate the User Data Screen

The following ten types of data can be saved in the user data.

- MSI Message
- Received Msg
- Self-test Log
- Self-test
- Data Report
- PV Test Log
- PV Test
- Polling
- Sent Message
- Communication Log

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [User Data] to open the user data screen.



To print the user data, check the check boxes for the desired data, then select the print icon (**Ctrl** + **P**).

To delete the user data, check the check boxes for the desired data, then select [Delete] (**Delete**). The confirmation message "Delete the selected item(s). Are you sure?" appears. Select [OK] (**Enter**).

To export the user data to a USB flash memory, check the check boxes for the desired data, then select [Export] (**Alt** + **E**). The file name is automatically set as follows.

MV-FURUNO_FELCOM20_xxxx_XXXXXXX_20220331094532

Ship's name | Model name | Software version | Data type* | Date and time of saving

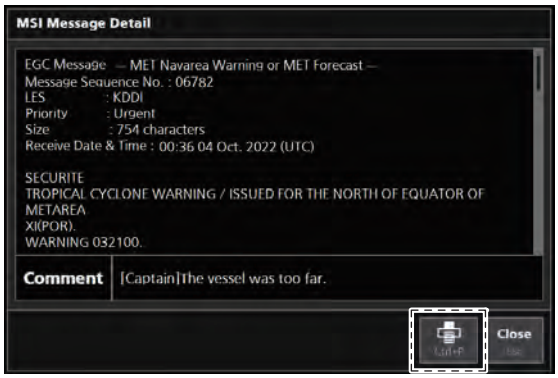
*: See the following.

- MSI Message: MSIMsg
- PV Test: PVT
- Received Msg: RcvMsg
- Polling: PollCmd
- Self-test Log: SelftestLog
- Self-test: Selftest
- Sent Message: SndMsg
- Data Report: DataReport
- Communication Log: ComLog
- PV Test Log: PVTLog

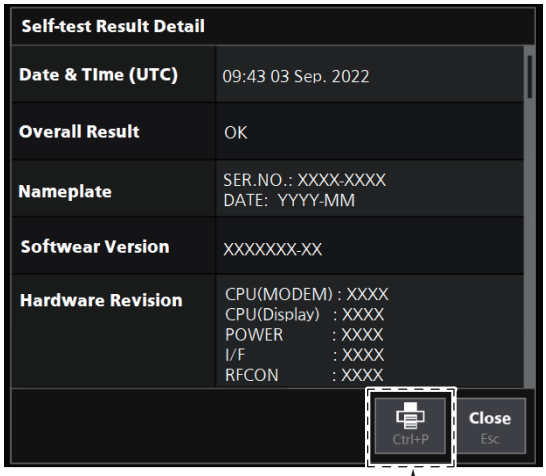
How to display detailed user data

To display detailed user data, select the user data in the user data screen, then select [Details] (**Enter**).

MSI message

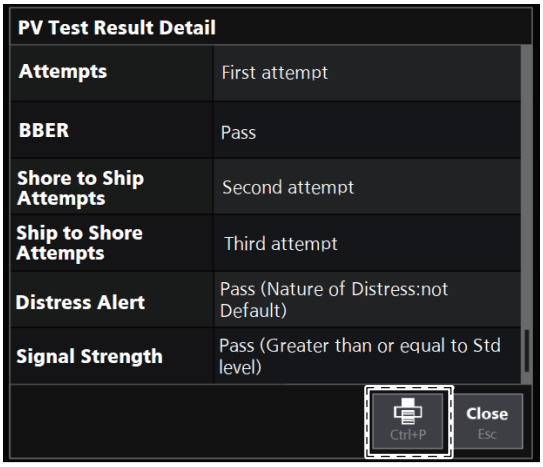


Self test

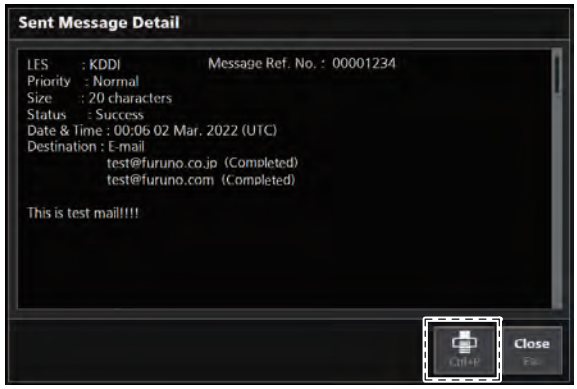


Print icon

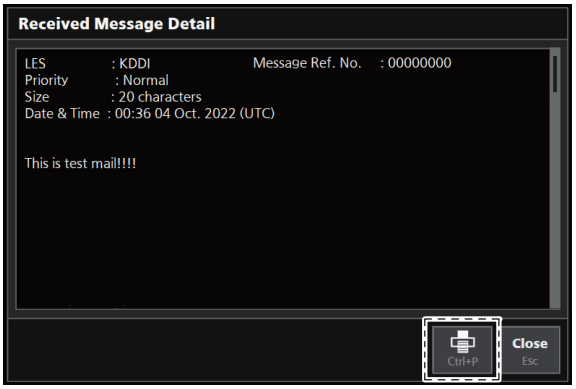
PV test



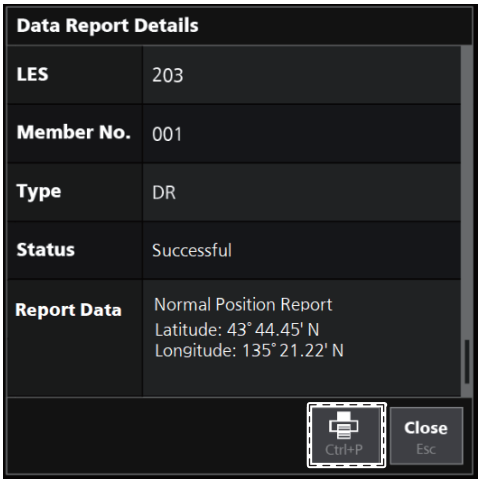
Sent message



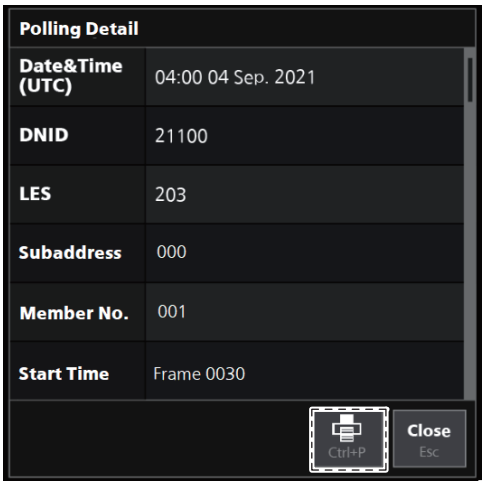
Received message



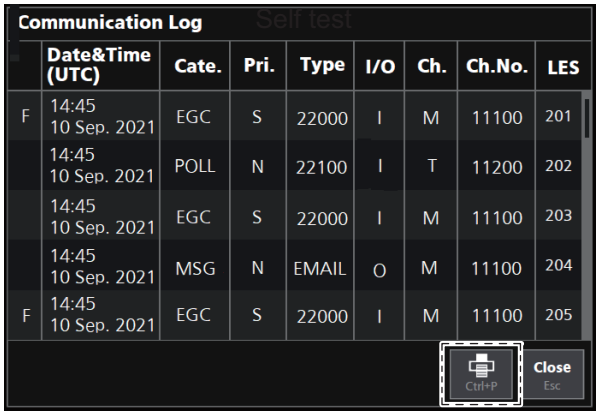
Data report



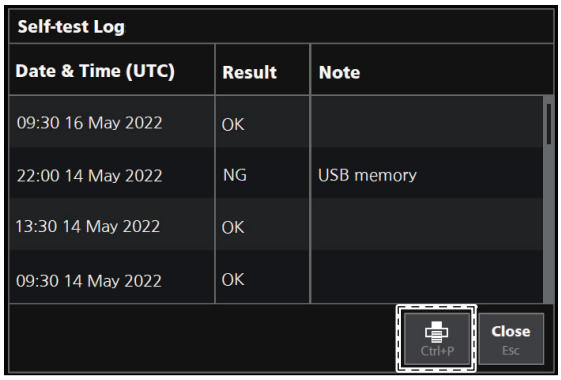
Polling



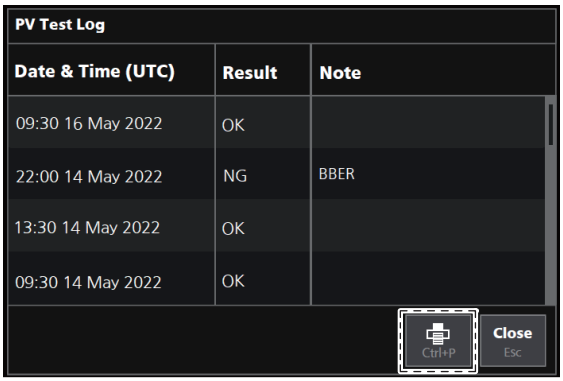
Communication log



Self test log



PV test log



To print detailed user data, select the print icon (**Ctrl+P**).

7.6 How to Set Own Ship's Information

For settings, contact your dealer.

7.7 How to Set Network Settings

For settings, contact your dealer.

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8. MAINTENANCE

This chapter provides the information necessary for the maintenance and checking of the FELCOM20. Please review the safety information at the beginning of this manual before attempting any maintenance procedures.

8.1 General Checking and Maintenance

Regular maintenance helps to keep your equipment in good condition and prevents future problems. Check the items shown below. Turn off the power before conducting any maintenance procedures.

⚠ WARNING

Do not open the equipment.

This equipment uses high voltage electricity which can shock, burn or cause serious injury. Only qualified technicians are allowed to work inside the equipment.

NOTICE

Do not apply paint, anti-corrosive sealant or contact spray to coating or plastic parts of the equipment.

Those items contain organic solvents that can damage coating and plastic parts, especially plastic connectors.

How to clean the terminal unit

Remove dust with a dry, clean cloth. Do not use commercial cleaners to clean the equipment - they can remove paint and markings.

Wipe the LCD carefully to prevent scratching. For difficult dirt or salt deposits, use wet cloth with water and neutral detergent (less than 1% detergent). Squeeze the cloth until it is dry, then clean the display. When the display is clean, gently wipe the display with a clean, soft, dry cloth, to prevent scratching.

How to check connectors and ground terminal

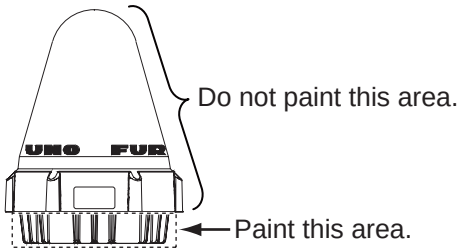
Check that the connectors and earth terminal on the terminal unit are tightly fastened. If the copper strap (earth material) has rusted, clean it.

If the terminal unit cannot be turned on...

- Check if the fuse in the power cable has blown.
- Check if the power cable connector on the rear panel of the terminal unit is tightly fastened.
- Check if the ship's mains switchboard is turned on.
- If you still cannot turn on the power, have a qualified technician check the power voltage at the power connector on the rear of the terminal unit.

Antenna unit

Check the antenna unit yearly for rust, corrosion and chipped paint. If the antenna base has rusted or the paint has chipped, paint the affected area. Paint only the antenna base. Do not paint the radome. Paint on the radome can cause loss of sensitivity and crack the radome.



Also check the anti-corrosive sealant on the ground bolt for deterioration (peeling, cracking, etc.) every 3 to 6 months. If the deterioration is minor, re-apply the sealant. For serious deterioration, completely remove the sealant, then re-apply the sealant. Water leakage can corrode the bolt if it is not properly treated.

8.2 Diagnostics

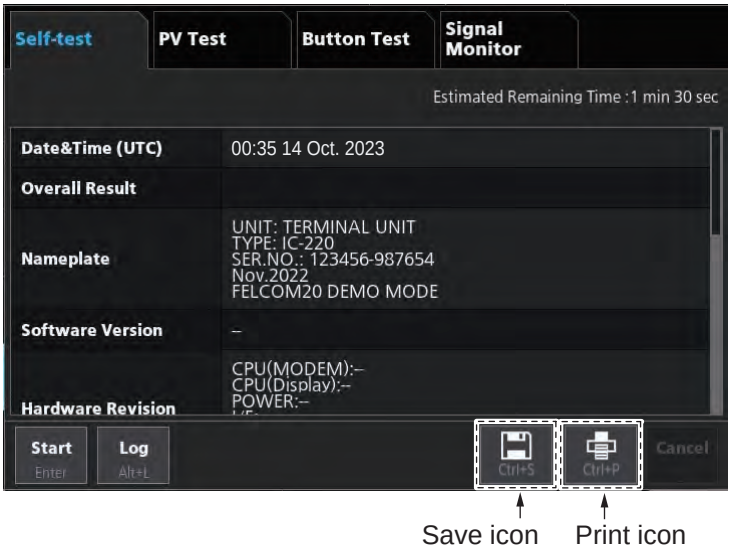
8.2.1 Self test at startup

The terminal unit performs the ROM sum test, and RAM reading/writing test at system startup. If the test results are normal, the terminal unit goes into normal operation state. If an error is found, the unit is not able to transmit.

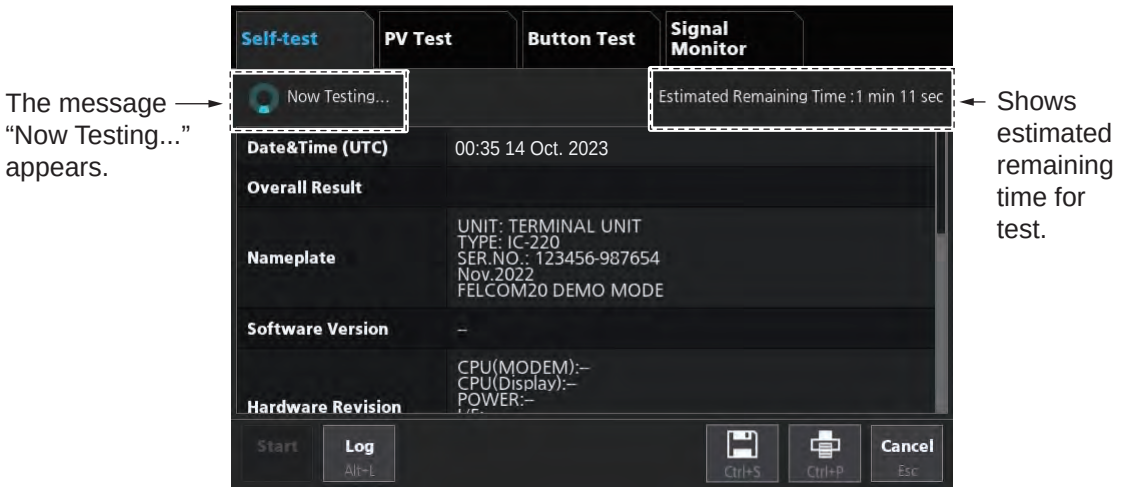
8.2.2 Diagnostic

Confirm that [Current Status: IDLE] appears at the [Dashboard] screen.

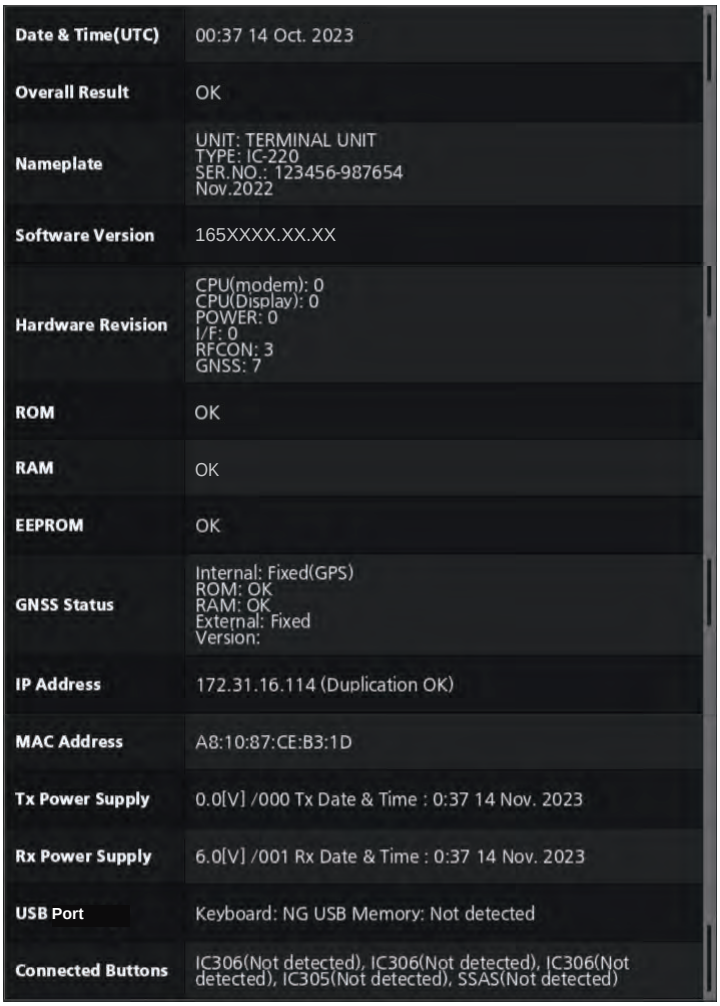
1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Diagnostics].
3. Select the [Self-test] tab.



4. Select [Start] (**Enter**) to start the test. The screen changes as shown in the figure below.



When the test is completed, the screen shows the test results.



Item	Meaning
[Date & Time (UTC)]	Shows test start date and time.
[Overall Result]	Shows overall test result as [OK] or [NG].
[Nameplate]	Shows unit, type, serial number, manufacturing date, Inmarsat certification number, Inmarsat approval date, MLIT approval number, ISED (Canada), and CMIIT ID (China).
[Software Version]	Shows software version.

Item	Meaning
[Hardware Revision]	Shows revision for each board.
[ROM]	Shows result for ROM check as [OK] or [NG].
[RAM]	Shows result for RAM check as [OK] or [NG].
[EEPROM]	Shows result for EEPROM check as [OK] or [NG].
[GNSS Status]	Shows internal/external GNSS status.
[IP Address]	Shows IP address (duplicate IP addresses detected in the network).
[MAC Address]	Shows MAC address.
[Tx Power Supply]	Shows the most recent transmission voltage and current values, as well as the transmission date and time.
[Rx Power Supply]	Shows the most recent reception voltage and current values, as well as the reception date and time.
[USB Port]	• Shows whether the keyboard is connected to the rear USB port or not, with [OK] or [NG]. • Shows whether the USB flash memory is inserted to the front USB port or not, with [Detected] or [Not detected]. **Note:** For USB ports, see subsection 2.1.5.
[Connected Buttons]	Shows devices (IC-305, IC-350, IC-306, IC-307) connected to the junction box. [Not detected] is displayed for devices that are connected but cannot be detected.

To stop the test, select [Cancel] (**Esc**).

To save the test results in [User Data], select the save icon (**Ctrl** + **S**).

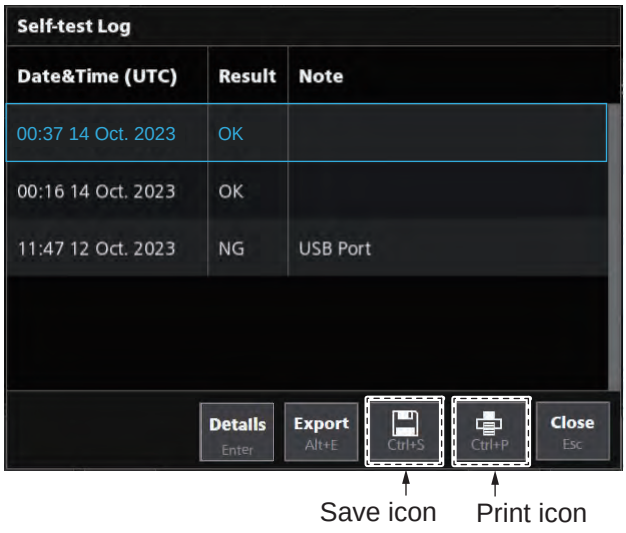
To print the test results, select the print icon (**Ctrl** + **P**).

How to automatically save self-test results

1. Open the [Admin] menu referring to section 2.8.
2. Select [Auto Save/Print].
3. Select the [Auto Save] tab.
4. Turn on (✓) [Self-test Result] to save the self-test results automatically.
5. Select [Apply] (**Enter**) to confirm the selection.

Self-test log

To open the self-test log, select [Log] (**Alt** + **L**).



Item	Meaning
[Date & Time (UTC)]	Shows start date and time of test.
[Result]	Shows overall test result as [OK] or [NG].
[Note]	Shows the item for NG.

To export the test results in CSV format to a USB flash memory, select the test result, then select [Export] (**Alt** + **E**). The file name is automatically set as follows.

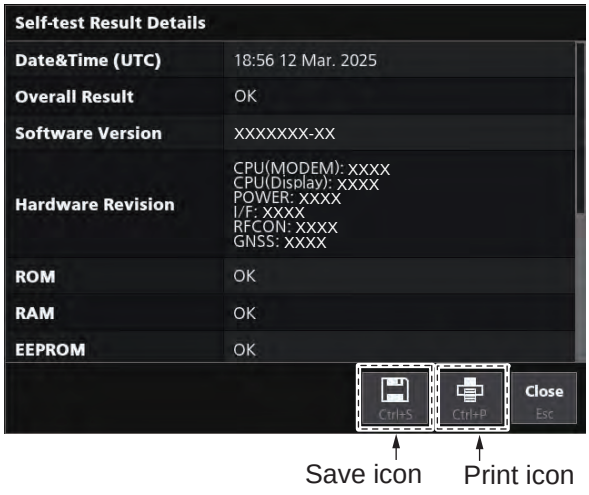
MV-FURUNO_FELCOM20_xxxx_SelftestLog_20240331094532

Ship's name / Model name / Software version / Fixing / Current date and time

To save the selected test results in [User Data], select the save icon (**Ctrl** + **S**).

To print the selected test results, select the print icon (**Ctrl** + **P**).

To open the selected test log screen as shown in the figure below, select [Details] (**Enter**).



8.3 Performance Verification (PV) Test

After the FELCOM20 is installed, the installer usually confirms that it is functioning properly, by logging in and conducting the PV test. This test consists of receiving a test message from an LES, transmitting a message to the LES, and a distress alert test.

The test results appear on the [PV Test] screen.

The PV test cannot be conducted from an auxiliary terminal unit. Note that the test can also be initiated by an NCS.

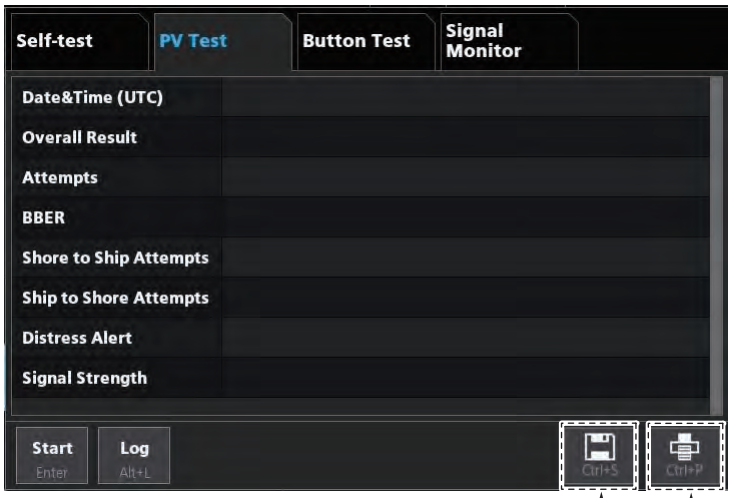
8.3.1 PV test sequence

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Diagnostics].
3. Select the [PV Test] tab.
4. The MES requests an NCS to conduct the PV test.
5. The NCS acknowledges request for testing.
6. The MES, upon receiving acknowledgment from NCS, goes into pending state.

7. The NCS selects an LES to perform the test.
8. The LES transmits a test message to the MES.
9. The MES transmits a test message to the LES.
10. The LES receives the test message.
11. The MES automatically transmits the distress alert test within two minutes after completion of step 8.
12. When the distress alert test is finished, the LES sends the results of the PV test to the MES.

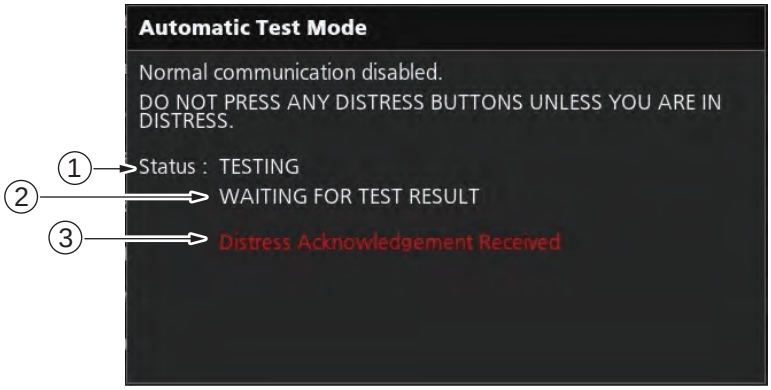
8.3.2 PV test procedure

1. Confirm that the terminal unit is in idle condition and is logged in.
2. Select [Menu] (**F6**) to open the [Menu] screen.
3. Select [Diagnostics].
4. Select the [PV Test] tab.



5. Select [Start] (**Enter**). The confirmation message "Starting automatic test mode: Normal communication disabled. Do not press any distress buttons unless you are in distress. Are you sure?" appears.
   Note: If the terminal unit is not idle when the test is initiated, the notification message "Ignored: MES is not idle." appears. If the terminal unit is not logged in, the notification message "Ignored: MES not logged in. Please login." appears.
6. Select [OK] (**Enter**) to start the test.
7. The (automatic) testing sequence is as follows:
   1) [IDLE (PENDING)] is displayed in [Current Status] of the [Dashboard] screen when you receive the acknowledge signal from the NCS.

2) When preparations for testing have been completed, the screen as shown in the figure below appears. The indication for [Status] changes from [TEST SETUP] to [TESTING].



No.	Meaning
1	Shows the status of the PV test. • [TEST SETUP]: Requesting PV testing. • [TESTING]: Performance PV testing.
2	Shows the communication status of the PV test. • [TEST-RECEIVING MESSAGE]: Receiving test message from LES. • [TEST-SENDING MESSAGE]: Sending test message to LES. • [TEST-DISTRESS ALERT]: Sending test distress alert to LES. • [WAITING FOR TEST RESULT]: Waiting for results of PV test. • [CLEARING]: Clearing PV test.
3	Shows the status of distress alert in red. • [Sending Distress Alert Test]: Sending test distress alert to LES. • [Distress Acknowledgement Received]: Receiving test distress acknowledgement from LES.

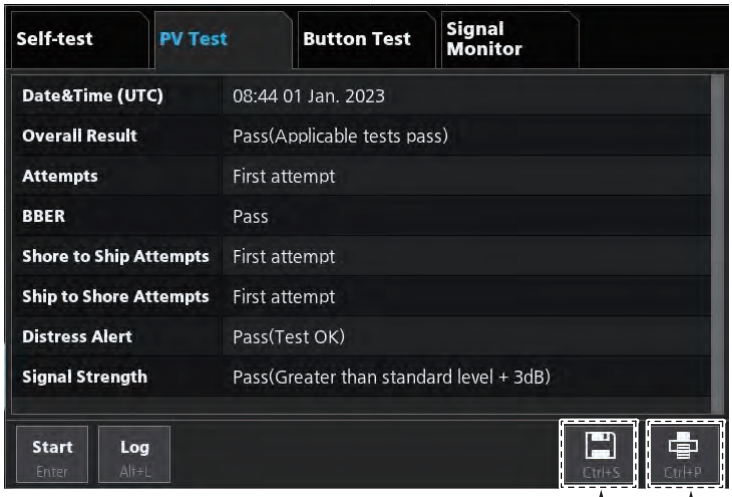
3) Receive a message from the LES. Send a test message to the LES.

4) Then, the distress alert test is automatically conducted after you have sent a test message. Do not operate the equipment at this time.

5) When testing has been completed, [Current Status] changes to [IDLE].

8.3.3 How to show the PV test results

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Diagnostics].
3. Select the [PV Test] tab to show the PV test results.



Item	Meaning
[Date & Time (UTC)]	Shows start date and time of test.
[Overall Result]	Shows overall test result as [Pass] or [Fail].
[Attempts]	Number of times the PV test was conducted.
[BBER]	Bulletin Board Error Rate (%). [Pass] appears for low error rate, [Fail] appears for high error rate.
[Shore to Ship Attempts]	Number of tests initiated by LES.
[Ship to Shore Attempts]	Number of tests initiated by MES.
[Distress Alert]	Shows distress alert test result as [Pass] or [Fail].
[Signal Strength]	[Pass] appears if signal strength is greater than standard level. [Fail] appears if signal strength is less than standard level.

To save the PV test results in [User Data], select the save icon (**Ctrl** + **S**).

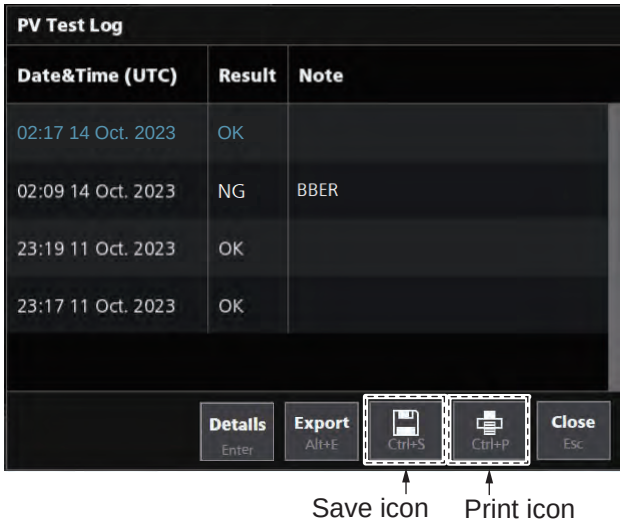
To print the PV test results, select the print icon (**Ctrl** + **P**).

How to automatically save PV Test results

1. Open the [Admin] menu referring to section 2.8.
2. Select [Auto Save/Print].
3. Select the [Auto Save] tab.
4. Turn on (✓) [PV Test Result] to save the PV test results automatically.
5. Select [Apply] (**Enter**) to confirm the selection.

PV test log

To open the PV test log, select [Log] (**Alt** + **L**).



Item	Meaning
[Date & Time (UTC)]	Shows start date and time of test.
[Result]	Shows overall test result as [OK] or [NG].
[Note]	Shows the item for NG.

To export the test results in CSV format to a USB flash memory, select the test result, then select [Export] (**Alt** + **E**). The file name is automatically set as follows.

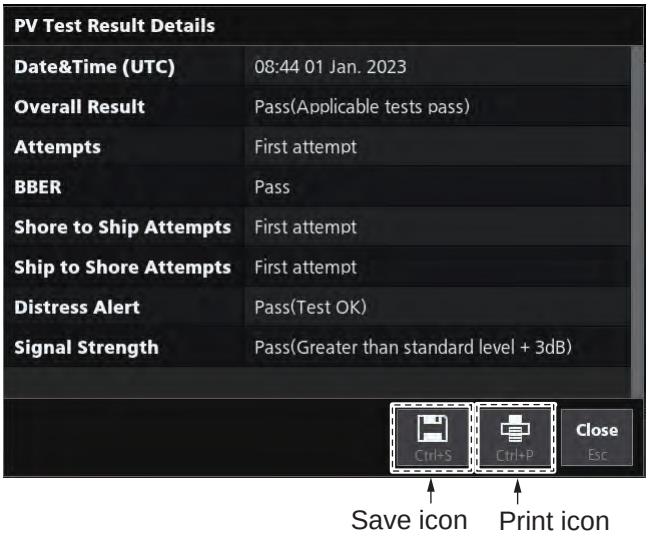
MV-FURUNO_FELCOM20_xxxx_PVTLog_20240331094532

Ship's name / Model name / Software version / Fixing / Current date and time

To save the selected test results in [User Data], select the save icon (**Ctrl** + **S**).

To print the selected test results, select the print icon (**Ctrl** + **P**).

To open the selected test log screen as shown in the figure on the next page, select [Details] (**Enter**).



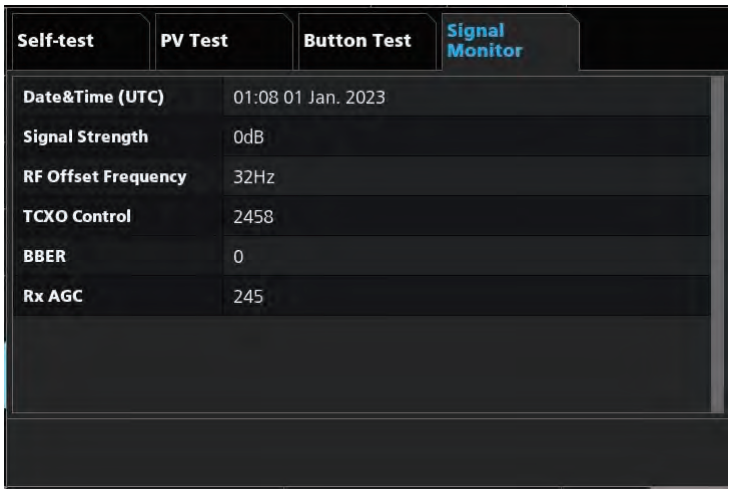
To save the test results in [User Data], select the save icon (**Ctrl** + **S**).

To print the test results, select the print icon (**Ctrl** + **P**).

8.4 Communication Signal Monitor

The [Signal Monitor] screen provides the status for communication signal.

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Diagnostics].
3. Select the [Signal Monitor] tab.



Item	Meaning
[Date & Time (UTC)]	Shows current date and time.
[Signal Strength]	Shows signal strength.
[RF Offset Frequency]	Shows RF offset frequency.
[TCXO Control]	Shows oscillator frequency control value.
[BBER]	Shows bulletin board error rate.
[Rx AGC]	Check of the receiving circuit of the antenna unit and the TERMCPU Board in the terminal unit. Shows its level.

8.5 System Status Monitor

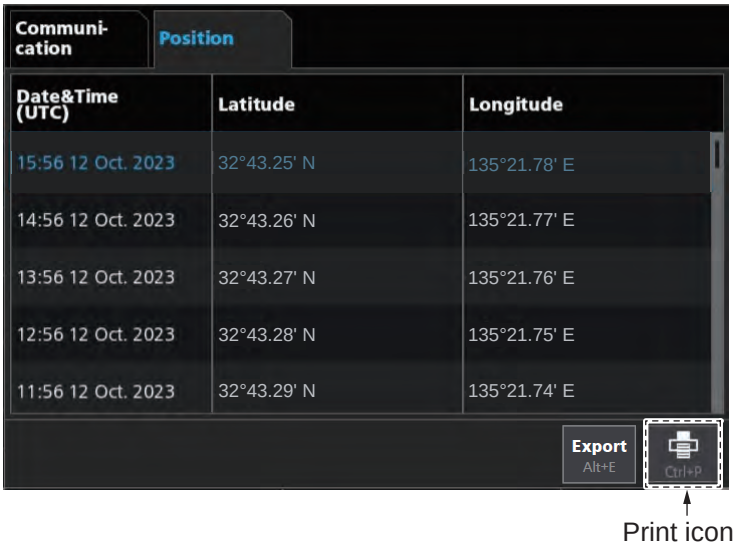
The [Dashboard] screen, which is always displayed, provides date, time, equipment status and navigation data. For further information, see section 2.5.

8.6 Current Position Log

Position is saved to the [Position] log every hour, and the log stores the latest 100 positions. When the log becomes full, the oldest entry is automatically deleted and positions are renumbered.

1. Select [Logs] (**F4**).

2. Select the [Position] tab.



Item	Meaning
[Date & Time (UTC)]	Shows date and time of the position.
[Latitude]	Shows latitude of the position.
[Longitude]	Shows longitude of the position.

To export the logs in CSV format to a USB flash memory, select the log, then select [Export] (**Alt** + **E**).The file name is automatically set as follows.

MV-FURUNO_FELCOM20_xxxx_PositionLog_20240331094532

Ship's name / Model name / Software version / Fixing / Current date and time

To print the selected logs, select the print icon (**Ctrl** + **P**).

8.7 Replacement of Fuse

The 15A fuse (for 12 VDC) or 7A fuse (for 24 VDC) in the power cable for the terminal unit protects the system from overcurrent and reverse polarity. If the terminal unit cannot be powered, contact your dealer for advice. Do not replace a fuse yourself.

⚠ WARNING

Use the proper fuse.

Use of a wrong fuse can result in fire or damage the equipment.

Name	Type	Remarks
Fuse	FGBO-A 125V 15A PBF	For 12 VDC
	FGBO 125V 7A PBF	For 24 VDC

8.8 Alert and Event Messages

This equipment displays alerts and event messages. This section describes the alerts and event messages and the methods to restore normal operation. If normal operation cannot be restored, contact your dealer for advice.

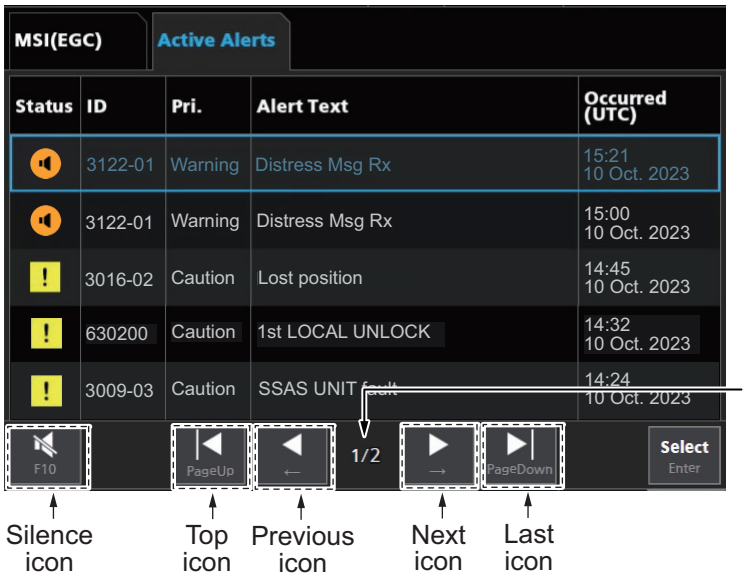
8.8.1 Alert messages

An alert message appears at the bottom of the display (notice area). For details, see d) in "3) Notice area" on page 2-13. Also, a pop-up message appears when receiving a distress priority message, distress priority EGC, or urgency EGC. For details, see section 2.9.

An alert message remains in the Alert list until the alert condition is resolved. See subsection 8.8.2.

8.8.2 Alert list

The Alert list displays unresolved alerts in the order generated. For warning alerts, once an alert is resolved, it is removed from the list when selecting [ACK] (**Enter**) in the [Alert Details] window. For caution alerts, once an alert is resolved, it is removed from the list. To show the Alert list, press the **ALERT LIST** key on the terminal unit, or select the  (Alerts) icon (**F12**) at the bottom right corner of the display.



Item	Meaning
[Status]	Shows the alert status with icons. See the table “Alert status” which follows.
[ID]	Shows the alert ID in 4 - 6 digits. See the Alert list on page AP-23 for details.
[Pri.]	Shows the alert priority order.
[Alert Text]	Shows the alert content.
[Occurred (UTC)]	Shows the time and date when the alert occurred.
Silence icon (**F10**)	Silences audio alarm. (Same as the **SILENCE** key on the terminal unit.)
Top icon (↑)	Moves to the top page.
Previous icon (←)	Moves to the previous page.
Next icon (→)	Moves to the next page.
Last icon (↓)	Moves to the last page.
[Select] (**Enter**)	Displays the detailed information for the selected alert. See "Alert detailed information" on page 8-14.

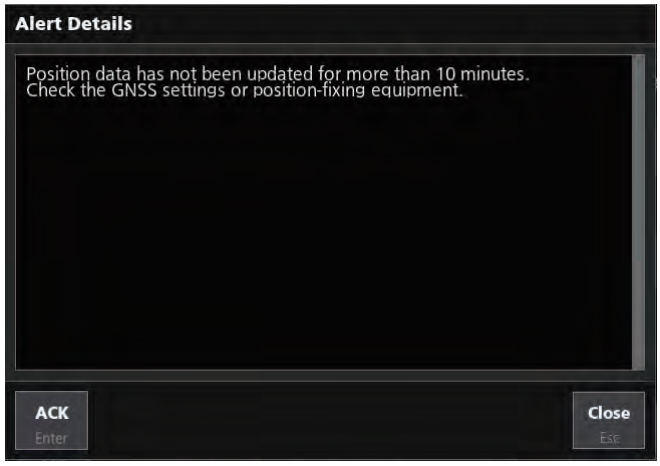
Alert status

	Alert	Icon
Act-Unack	Warning occurring (not confirmed in pop-up message)	
Silenced	Warning occurring (buzzer stopped by BAM system)	
Act-Ack	Warning occurring (confirmed in pop-up message)	
Act-RT	Warning occurring (Responsibility Transferred status)	
Rec-Unack	Warning resolved (not confirmed in pop-up message)	
Active	Caution occurring	

For responsibility transfer, see "Responsibility Transfer" on page AP-26.

Alert detailed information

Select the alert in the Alert list, then select [Select] (**Enter**) to display the [Alert Details] window.



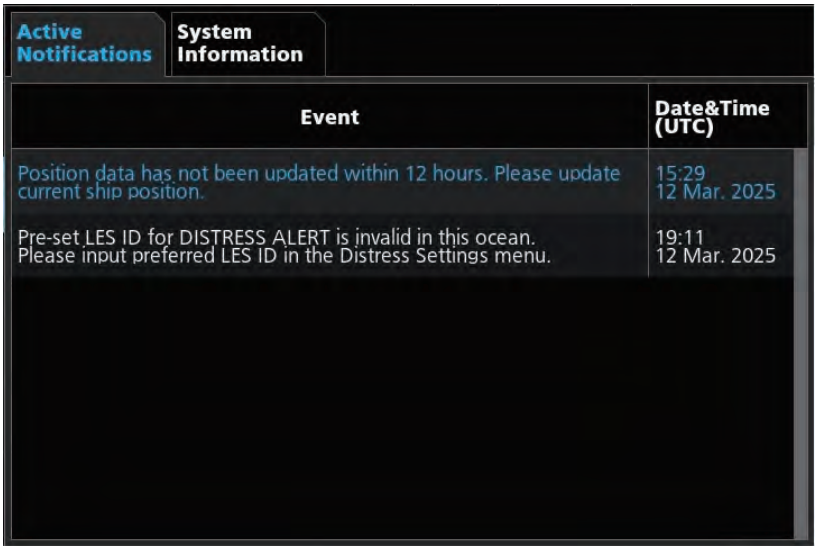
To acknowledge the alert, select [ACK] (**Enter**).

To close the window, select [Close] (**Esc**).

8.8.3 Event messages

[Active Notifications]

The [Active Notifications] screen shows an event requiring action or confirmation by you. To display the active notifications, select [Events] (**F3**) then select the [Active Notifications] tab.

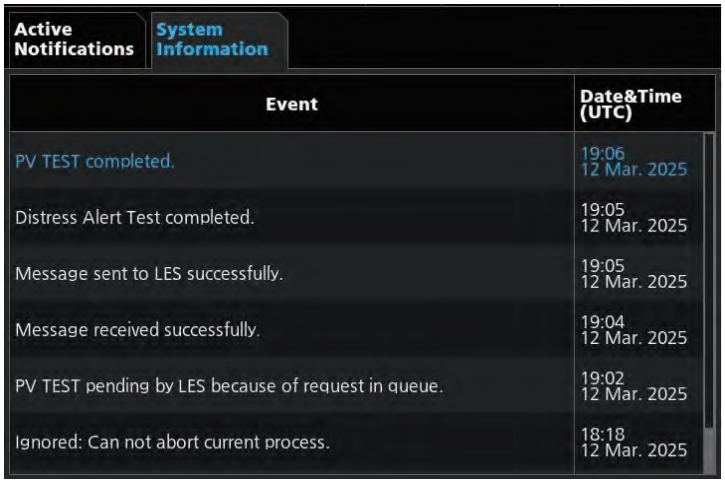


Event
Flash has nearly reached expiry. Have a licensed radio communications technician check the set.
eMMC has nearly reached expiry. Have a licensed radio communications technician check the set.
INF: NCS not available. (Restoration Mode in use.) You can select a preferred LES from the LES Information for Inmarsat-C NW Operation.
The System has detected an IP Address conflict. Check the network settings.
Inbox memory full.
Position data has not been updated within 12 hours. Please update current ship position.

Event
Pre-set LES ID for DISTRESS ALERT is invalid in this ocean. Please input preferred LES ID in the Distress Settings menu.
Device other than a keyboard detected in keyboard USB port.
Device other than a flash memory USB detected in flash memory port.
DISTRESS ALERT Position over 24 hours ago. Please update current position.
User data memory nearly full. Please delete unnecessary data.

[System Information]

The [System Information] screen shows the events occurring in the equipment. To display the system information, select [Events] (**F3**) then select the [System Information] tab.



Event
SSAS Button is now turned OFF.
Forced Clear successful.
Forced Clearing failed.
MES Signalling failed, Forced Clear not sent.
Timeout! Clear not received.
INF: ENID ***** was entered by EGC message. (*****: ENID number)
INF: ENID ***** was deleted by EGC message. (*****: ENID number)
INF: DNID ***** was entered by Polling. (*****: ENID number)
INF: DNID ***** was removed by Polling. (*****: ENID number)
INF: Pre-set LES ID for DISTRESS ALERT is overridden by LES ***. (***: LES number)
Signalling Channel Frequency offset is out of range.
Ignored: Format Error.
Ignored: Undefined Command.
Ignored: Can not abort current process.
Ignored: Can not Forced Clear current process.
Ignored: Awaiting message transfer, Can not start PV TEST.
Ignored: PV TEST has already been started, and now pending.
Ignored: Cannot start Distress Alert Test now.
Ignored: MES is not idle.
Ignored: Now receiving EGC message.
Ignored: MES not logged in. Please login.
Ignored: Network is in restoration mode.
Ignored: Invalid request.

Event
PV TEST completed.
PV TEST failed.
PV TEST aborted.
MES signalling failed during PV TEST.
Receiving Test failed; Timeout while waiting on NCS CC.
Sending Test failed. Too many retries.
PV TEST aborted by LES because of xxxxx. (xxxxx: message*2 of sub ID)
PV TEST pending by LES because of xxxxx. (xxxxx: message*1 of sub ID)
PV TEST rejected by LES because of xxxxx. (xxxxx: message*1 of sub ID)
PV TEST aborted because of Restoration mode.
TDM Signalling Channel lost.
Signalling Channel congestion.
Signalling Channel Reservation Lost.
Signalling Channel unavailable. The LES is out of service.
Signalling Channel Too many retries.
DNID memory full. Cannot enter new DNID.
ENID memory full. Cannot enter new ENID.
Can not find NCS CC in preferred region. Performing an all-region scan.
Failed to find NCS CC in all regions. Restarting full region scan.
Successful Login.
Login failed.
Login aborted.
MES Signalling Failure, Login Request not sent to NCS.
Timeout! Login Acknowledgement not received.
Login rejected by NCS because of xxxxx. (xxxxx: message*1 of sub ID)
Login failed because of RESTORATION mode.
Successful Logout.
Logout failed.
Logout aborted.
MES Signalling Failure, Logout Request not sent to NCS.
Timeout! Logout Acknowledgement not received.
Logout failed because of RESTORATION mode.
Received Poll Command.
Data Report sent successfully.
Data Report failed, unauthorized DNID.
Data Report failed, MES is not logged in.
Data Report failed, selected LES not in current region.
Data Report failed, TDM LOST.
MES Signalling Failure, Data Report failed.
Reserved access failure, trying unreserved access.
Data Report aborted.
Data Report failed, report too long.
Poll Acknowledgement sent.
Failed to send Poll Acknowledgement.
Polling received. Data Report initialized.
Polling Data Report failed. Invalid parameters.
Polling Data Report started.
Data Report stopped by Polling.

Event
Enhanced Data Report failed.
Distress Alert not sent to LES, trying to use NCS.
Distress Alert not sent to NCS. Starting a new NCS scan.
Distress Alert not sent to NCS. Re-send Distress Alert.
Distress Alert not acknowledged. Re-send Distress Alert.
Timeout! Distress Test not acknowledged.
MES Signalling Failure, Distress Alert Test not sent.
Distress Alert activated.
Distress Alert completed.
Distress Alert Test completed.
Distress Alert Test aborted.
Distress Alert Test failed.
Timeout! Distress Acknowledgement not received. Scanning NCS started automatically.
Timeout! LES response not received.
Message sent to LES successfully.
Failed to send message.
Sending message aborted.
Sending message aborted by LES because of xxxxx. (xxxxx: message[*2] of sub ID)
LES protocol error detected, Invalid Assignment.
Call rejected by LES because of xxxxx. (xxxxx: message[*1] of sub ID)
Call pending by LES because of xxxxx. (xxxxx: message[*1] of sub ID)
Selected LES not in current region.
MES Signalling Failure during pre-send procedure.
Awaiting message transfer.
Failed to send message, unauthorized DNID LES_ID pair.
Successful Delivery Status Request.
Delivery Status Request failed.
Delivery Status Request was aborted.
MES Signalling failure, Delivery Status Request not sent.
Message received successfully.
Failed to receive message.
Aborted receipt of message.
MES Signalling failure, during receiving message.
Message receipt aborted by LES because of xxxxx. (xxxxx: message[*2] of sub ID)
Request failed - It will be automatically retried in 1 hour
Request failed - Please retry later
Request pending
Request starting
Remote query (assignment details)
Remote control (resend report)
Report program resumed
Report program suspended
Request filed:
Parameter error
Demand Assigned LES: Transmitting Data Report as a Message

*Messages of sub ID for *1*

Sub ID	Message
256	signalling failure.
257	LES message store full.
258	requested destination not service.
259	satellite congestion.
260	terrestrial congestion.
261	requested service not provided.
262	request in queue.
263	request barred.
264	MES not logged in.
265	MES not commissioned.
266	waiting TDM assignment.
267	illegal request.
268	LES not in service.
269	requested service unavailable.
270	access to requested service denied.
271	invalid service.
272	invalid address.
273	unable to decode.
274	IWU number is invalid.
275	MES has not subscribed.
276	protocol version not supported.
277	PSTN modem type not supported.
278	Unrecognised PDU type.

*Messages of sub ID for *2*

Sub ID	Message
001	LES timeout.
002	MES protocol error detected.
003	LES hardware error detected.
004	operator forced clear.
005	MES forced clear.
006	LES protocol error detected.
007	MES fatal hardware error detected.
008	MES timeout.
009	unrecognised presentation code.
010	unable to decode.
011	IWU number is invalid.
012	MES has not subscribed.
013	requested service unavailable.
014	access to requested service denied.
015	invalid service.
016	invalid address.
017	destination MES not commissioned.
018	destination MES not logged in.
019	destination MES barred.
020	requested service not provided.
021	protocol version not supported.

Sub ID	Message
022	Unrecognized PDU type.

8.9 Security Test

To ensure that the security features are working properly, check the following points regularly.

Action for the user

- Confirm that the FELCOM20 is not connected to an unreliable network.
- Perform the self test to confirm that the software version is the latest. For the latest software version, contact your dealer.
- Back up the system settings referring to section 3.10. Confirm that the system settings are backed up to the specified save destination.
- Confirm that the network settings are as intended. For recommended settings and confirmation operation, contact your dealer.

Action for the service technician

Confirm that the security data settings comply with the shipowner's security policy. For recommended settings, see APPX.3 “NETWORK AND SECURITY CONFIGURATION SETTINGS” in the Adjustment Manual (AME-55810).

8.10 Remedy for Cyber Incidents

If a cyber incident occurs on the FELCOM20, take the following actions.

8.10.1 Network disturbance

If a network overload is detected on the Ethernet of the FELCOM20, an alert appears and the network is temporarily shut down. Once the network overload is cleared, the network is automatically restored and the alert is removed.

Action for the user

If the alert remains for a long time, contact your dealer.

Action for the service technician

1. Disconnect the network cable from the FELCOM20.
2. Check whether any network-connected devices output excessive data. If so, disconnect them from the network.
3. Reconnect the network cable to the FELCOM20.

8.10.2 Unauthorized access

If you notice any unauthorized password changes or user logouts, your password may have been leaked. Change your password immediately.

8.10.3 Data corruption

Action for the user

- If the FELCOM20 stops working due to system failure or malware, contact your dealer.
- Regularly back up the system settings to protect against data corruption. For back-up procedures, refer to section 3.10.

Action for the service technician

If necessary, reinstall the programs and recover the backup data.

8.11 Troubleshooting

If you suspect equipment trouble, first follow the troubleshooting information in the table below. If normal operation cannot be restored, do not attempt to check inside any unit. Have a qualified technician check the equipment.

Symptom	Cause, checkpoint	Remedy
The power cannot be turned on.	• Check that the power cable is firmly connected to the power connector at the rear of the Terminal Unit. • Check that the power for the FELCOM20 is on at the ship's switchboard. • Check for blown fuse in the power cable.	• Reconnect the power cable if it has loosened. • Turn on the power at the ship's switchboard. • Contact your dealer (see section 8.7).
After the power is turned on, a message "Startup failed." appears at the bottom of the startup screen.	An error occurred in the startup application.	Turn the power off and on again to restart. If the problem remains unsolved, contact your dealer.
Cannot touch (select) the desired menu.	• Check if other hands or objects are on the screen. • Check for dirt on the screen.	Check that nothing is touching the screen and that the screen is clean, then turn the power off and on again to restart.
No communications. • Cannot receive EGC messages. • Cannot receive polling command. • Cannot receive e-mail.	• Do the PV test. The [Overall Result] should be [Pass]. • Referring to section 2.5, confirm the following items. - C/N ([Signal Strength]) value is [OK]. - You are logged in.	• If the PV test result is [Fail], follow the information in subsection 8.3.3. • Check for interfering objects near the antenna. If interfering objects are present, relocate the antenna, referring to the installation manual.
[Channel Type] remains [UNSYNC] for more than five minutes and does not synchronize.	• Check that the antenna is correctly connected. • Check that the correct Ocean Region is set.	• Connect the Inmarsat-C antenna to the ANT connector on the terminal unit, not the GNSS ANT connector. • Select an Ocean Region that can be used at your ship's location.
Error message is displayed.	—	Refer to "ALERT LIST" on page AP-23.

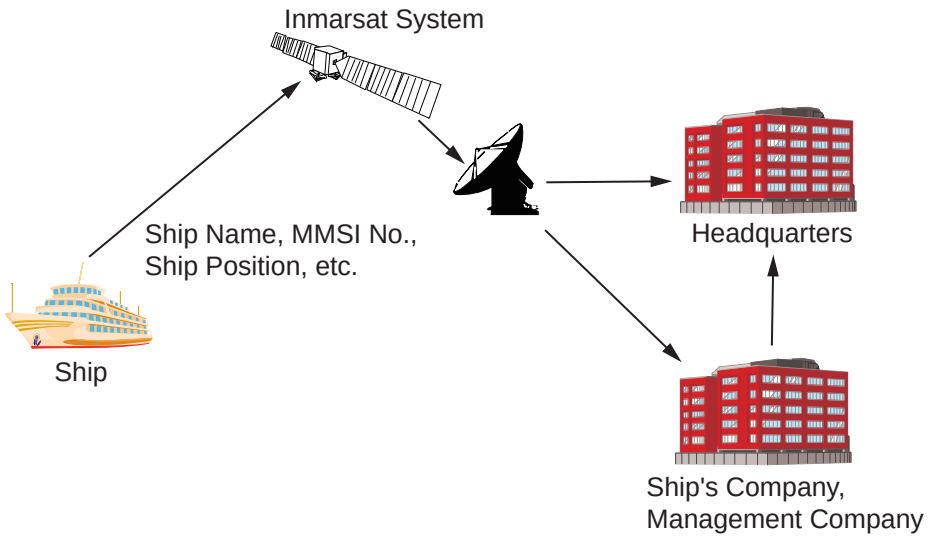
9. SHIP SECURITY ALERT SYSTEM (SSAS) IC-307

9.1 Overview of SSAS

The IC-307 SSAS (Ship Security Alert System) Alert Unit connects to the FELCOM20 for the purpose of alerting specified addresses (for example, your ship's company) that your ship is under attack by intruders. The SOLAS Resolution XI-2/6 requires vessels of 500 GT or more constructed before 01 July 2004 to install an SSAS.

When your ship is under attack, an SSAS report, which contains your ship's name, MMSI No., position, etc. is sent to the locations specified by the ship's captain or authorized personnel (Max. 10 addresses). No audible or visible alarm is generated while the SSAS report is being transmitted, to prevent discovery of the report by the intruders.

The SSAS is protected with a password to prevent unauthorized setting or testing of it by other than the ship's captain or authorized personnel.



SSAS operation flow

1. Open the cover of the button and then press the button. (This is a latch-type button; hit and release to activate the button.)
2. If addresses have been preset, the SSAS report is sent to one address 30 seconds after the button is activated. The maximum number of presets are 10 addresses.
3. An LES sends acknowledgement to your ship.
4. Steps 2-3 and are repeated in case of multiple addressees.
5. Continuous transmission of the SSAS report begins. (The interval at which to transmit the SSAS report to each address can be specified. The SSAS report is continuously transmitted while the button is ON, at the interval selected.)
6. To stop transmission, press the button again to deactivate it. (This is only possible in the SSAS manager mode. See section 9.2.)

9.2 Operation

There are two menu operating modes:

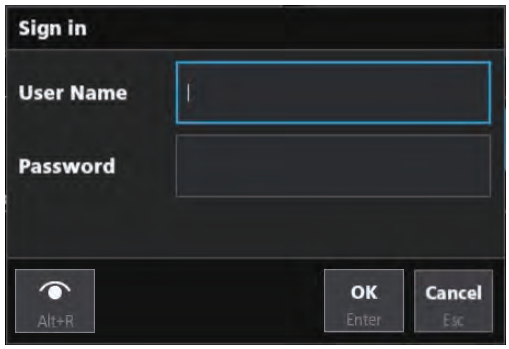
- Normal mode: Menus other than SSAS-related menus are displayed.
- SSAS manager mode: The mode is activated by the password entered by the ship's captain or authorized personnel. The indication "SSAS Manager Mode" is shown at the top of the screen when this mode is activated. All SSAS-related menus are available. Transmission of the SSAS report may be canceled in this mode. The equipment starts up in the normal mode, regardless of the mode in use, when the power is turned off.

SSAS manager mode

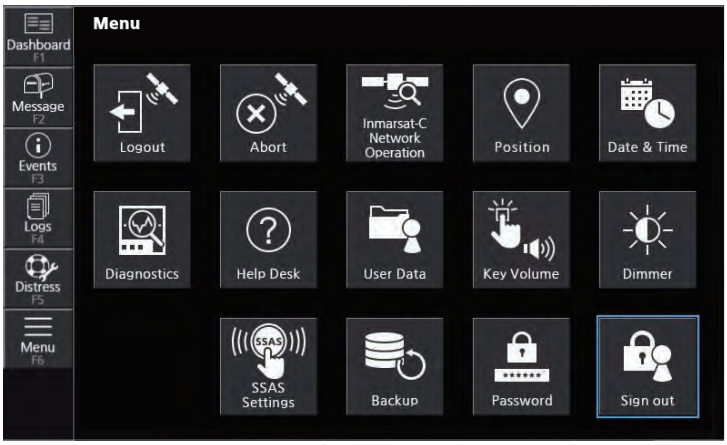
All SSAS-related settings are set in the SSAS manager mode. Do the following to access this mode.

Note: To enable the SSAS function, the preset by a service technician is required. Before using the SSAS function, be sure to set a password (see the Adjustment Manual (AME-55810)).

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Sign in] to open the [Sign in] window.
3. Enter the user name ("SSASAdmin") and password, then select [OK] (**Enter**).
   Note 1: If you forget the password, see subsection 2.7.3 to initialize the password, and then immediately set a new password.



   Note 2: If you want to visualize the input values, select  (**Alt** + **R**).
   Note 3: If there is no operation for a specified time after signing in (default: 15 minutes), the system will automatically sign out from the [Admin] menu.
   Note 4: If you cannot set sign in to the SSAS manager mode, contact your dealer.
4. Select [Menu] (**F6**) to open the [Menu] screen in the SSAS manager mode.



5. Select [SSAS Settings] to open the SSAS manager mode.

Note: Turn the power off and on again to quit the SSAS manager mode whenever finishing the SSAS test.

How to quit the SSAS manager mode

To quit the SSAS manager mode, do one of the following:

- Select [Sign out] (see the illustration at step 4 on page 9-2).
- Restart the FELCOM20.

9.3 How to Set the SSAS Report Destination and the Message Contents

When the SSAS is activated, the preset message content set at [SSAS Report Contents] is sent to the preset destinations.

Note 1: The destination and message content of an SSAS report varies according to Administration. Therefore, set them as requested by ship's authorities. For information other than ship's name, MMSI no. and IMN no., set it manually with [Other Information].

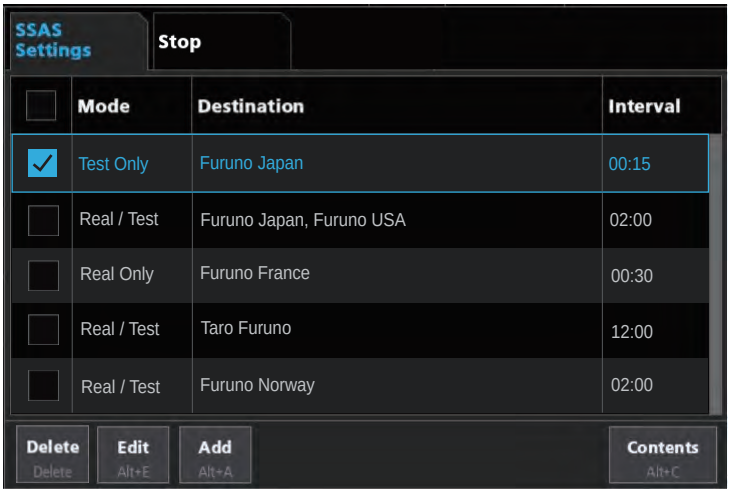
Note 2: SSAS reporting destinations can be preset (max.10 e-mail addresses for broadcast transmission, max. 50 destinations across SSAS). However, for Japanese vessels, the following two destinations must be included by law:

- newsat@jcgcomm.jp
- jcg-newsat@mlit.go.jp

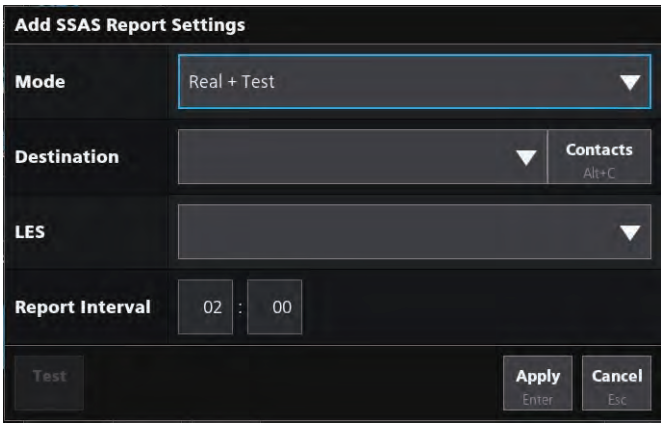
Therefore, Japanese vessels' maximum presets are eight e-mail addresses.

Note 3: This function is available with the SSAS manager mode.

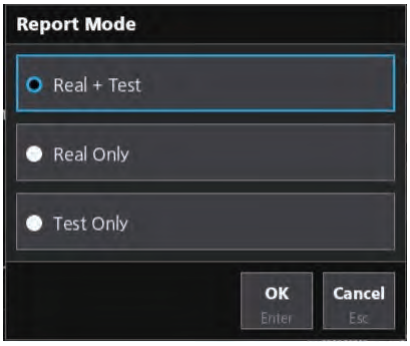
1. Open the [SSAS] menu referring to section 9.2.
2. Select the [SSAS Settings] tab.



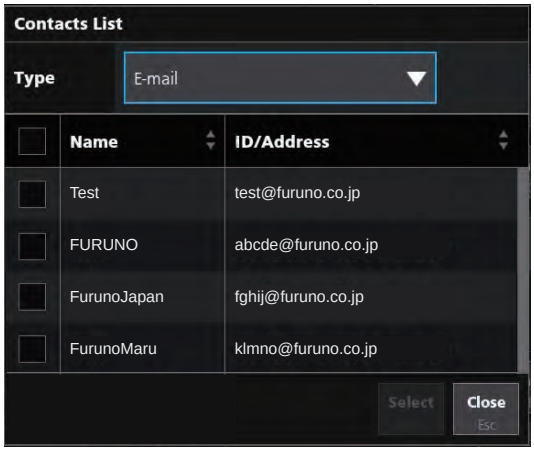
3. For adding a destination, select [Add] (**Alt** + **A**) to open the [Add SSAS Report Settings] window. For editing the destination, select it and select [Edit] (**Alt** + **E**) to open the [Edit SSAS Report Settings] window. The figure below shows the [Add SSAS Report Settings] window.



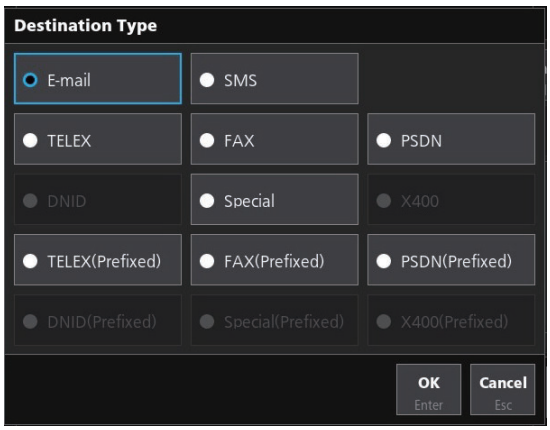
4. Select [Mode] to open the [Report Mode] window.



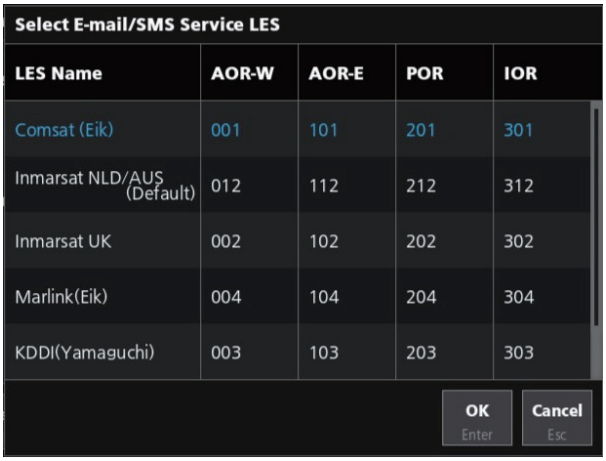
5. Select the mode, then select [OK] (**Enter**).
   [Real + Test]: Actual SSAS report and test SSAS report.
   [Real Only]: Actual SSAS report only.
   [Test Only]: Test SSAS report only.
6. Select [Contacts] (**Alt** + **C**) to open the [Contacts List] window.



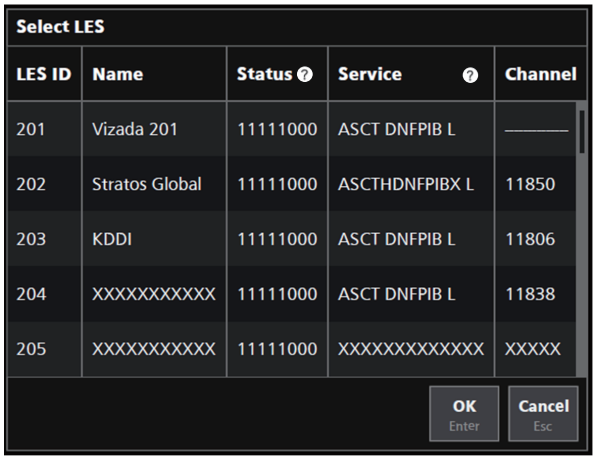
7. Select [Type] to open the [Destination Type] window.



8. Select the destination type, then select [OK] (**Enter**).
9. Select the destination(s), then select [Select] (**Enter**). To send the message to destination(s) not registered on the Contacts list, set the destination(s) referring to step 7 onwards "How to send a message to a destination not registered in the Contacts list" on page 4-6.
10. Select [LES] to open the [Select E-mail/SMS Service LES] or [Select LES] window. If the communication format is e-mail or SMS, the LES set in section 3.9 appears. If the communication format is DNID, the selected DNID appears.



For e-mail and SMS

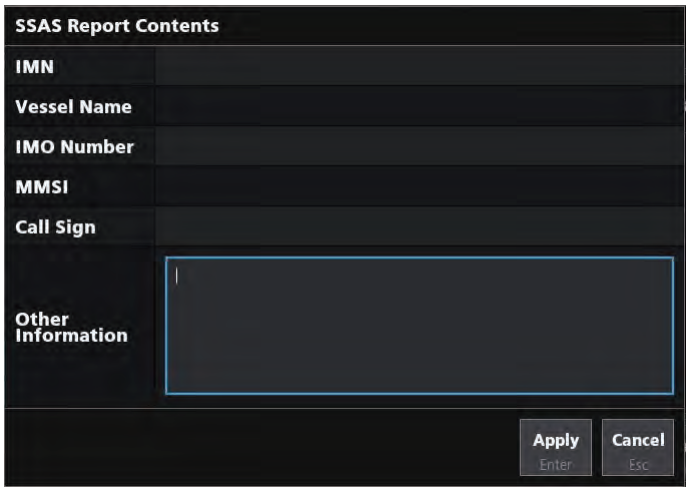


For others

11. Select the LES, then select [OK] (**Enter**).
12. Select [Report Interval], then enter the time interval (00:10-99:59) to transmit the SSAS report.
13. Select [Apply] (**Enter**) to confirm the selection and return to the [SSAS Settings] tab.

    Note: To send a test message to the set destination, select [Test] (**Alt** + **T**) (see section 9.6).

14. Select [Contents] (**Alt** + **C**) to open the [SSAS Report Contents] window.



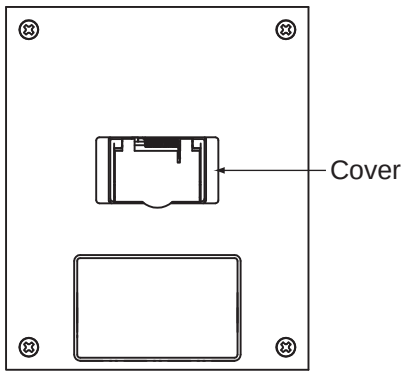
15. Select [IMN], then enter the IMN.
16. Select [Vessel Name], then enter your vessel's name.
17. Select [IMO Number], then enter the IMO number.
18. Select [MMSI], then enter the MMSI number.
19. Select [Call Sign], then enter the call sign.
20. Select [Other Information], then enter desired message.
21. Select [Apply] (**Enter**) to confirm the settings and return to the [SSAS Settings] tab.

To delete the entered SSAS report data, select it, then select [Delete] (**Delete**) on the [SSAS Settings] tab.

9.4 How to Transmit the SSAS Report

In the normal mode, the SSAS report is sent 30 seconds after the button on the SSAS is pressed. The SSAS repeatedly transmits the report even if the button is pressed off ( ). Repeated transmission can only be stopped from the SSAS manager mode.

1. Open the cover of the SSAS alert button.
2. Press the button. The button is a latch-type button; hit and release the button to activate ( ) the SSAS unit.



3. The SSAS report is transmitted 30 seconds after the button is pressed in ( ). Below are the contents of the SSAS report.

```
- - - SSAS ALERT MESSAGE - - -
Vessel Name: Queen Elizabeth 2 <-------- Ship's Name
MMSI:        111660000 <-------- MMSI No.
IMN:         443100000 <-------- IMN No.
IMO:         123456789 <-------- IMO No.
Help me! <-------- Desired message
LAT:          34:44.46N <-------- Own ship position in latitude
LON:         135:21.26E <-------- Own ship position in longitude
Time:        02/04/2004 04:31:48 (UTC) <-- Time of position data
COURSE:      071 deg <-------- Course
SPEED:        00 kt <-------- Speed
Time:        02/04/2004 04:31:48 (UTC) <-- Time of course and speed data
```

4. An LES sends acknowledgement to your ship.
5. For multiple destinations, steps 3 and 4 are repeated.
6. The SSAS report is transmitted repeatedly while the button remains pressed in ( ).
7. To stop transmission, press the button again to pop it out ( ). (SSAS manager mode only.)

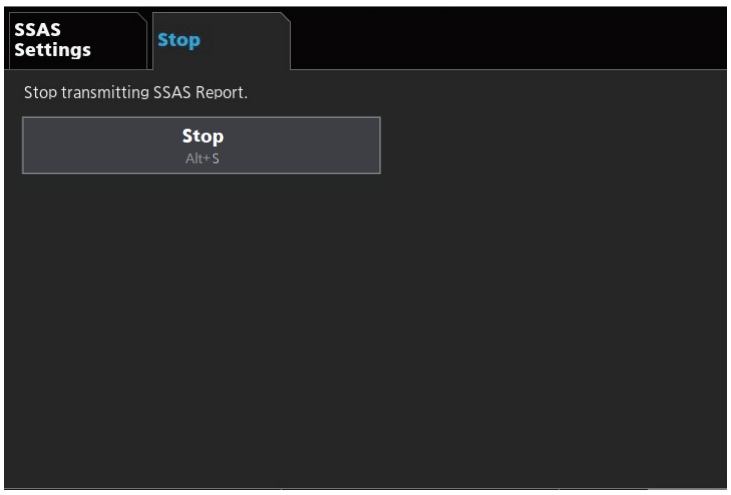
Note: If transmission is not canceled with the button and the power is turned off, the equipment resumes repeated transmission when powered again.

How to cancel the transmission when the transmission is erroneously made

Note 1: The SSAS report is sent 30 seconds after the button on the SSAS is pressed.

Note 2: When the cancellation is made, the message "SSAS Button is now turned OFF." appears on the [System Information] screen (see subsection 8.8.3).

- Within 30 seconds after the button is pressed, press the button on the SSAS again to turn it off.
- More than 30 seconds after the button is pressed, do the following;
  1. Open the [SSAS] menu referring to section 9.2.
  2. Select the [Stop] tab.



  3. Select [Stop] (**Alt** + **S**). The information message "Repeated transmission is stopped." appears.

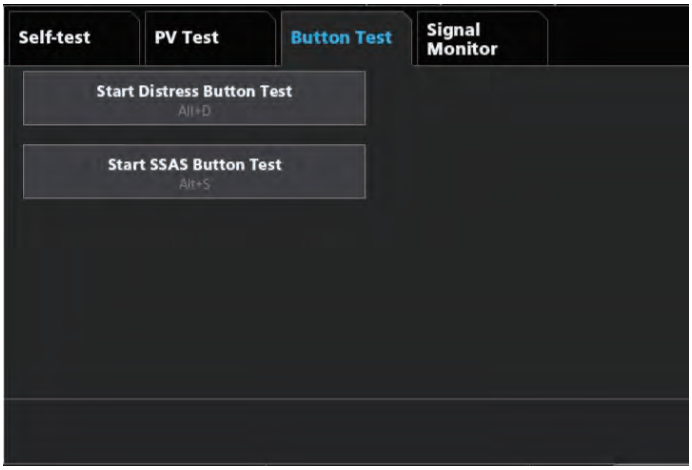
9.5 How to Test the SSAS Alert Button

Note 1: An actual SSAS report cannot be transmitted during the testing.

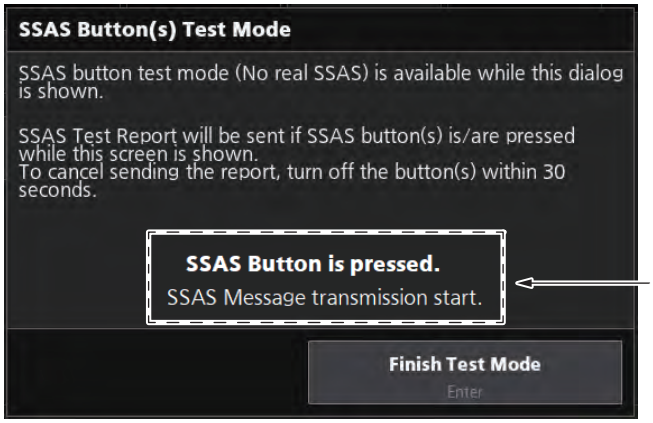
Note 2: The equipment must be in the SSAS manager mode to conduct the test.

In case of not sending the test report

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Diagnostics].
3. Select the [Button Test] tab.



4. Select [Start SSAS Button Test] (**Alt** + **S**). The confirmation message "Start the SSAS button test. Are you sure?" appears.
5. Select [OK] (**Enter**). The [SSAS Button(s) Test Mode] window appears.



The messages shown in the table below appear in the message area.

Upper row	When the SSAS button is turned on, "SSAS Button is pressed." appears.
	When the SSAS button is turned off, "SSAS Button is now turned OFF." appears.
Lower row	When an SSAS message transmission starts, "SSAS Message transmission start." appears.
	When an SSAS test transmission is completed, "Please return the SSAS button to the OFF position." appears below the message "SSAS Message transmission start."

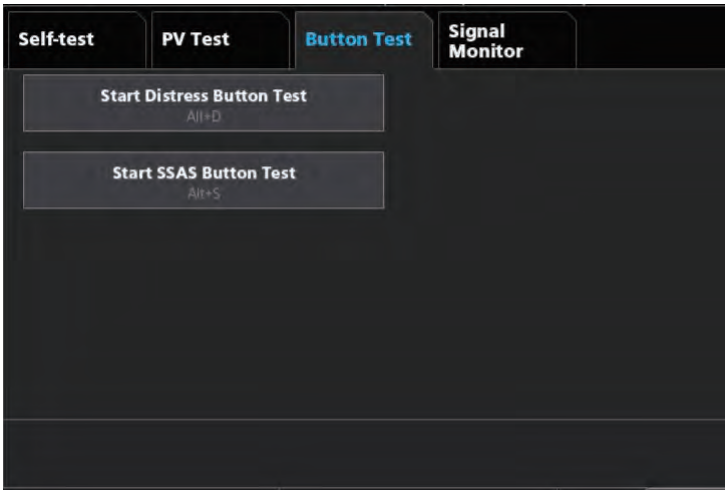
6. Open the button cover on the No.1 SSAS.
7. Press the button in (▬). The CAUTION window displays the message "SSAS UNIT works correctly." if the unit is functioning properly.

8. Turn the button of the No.1 SSAS off (▟) within 30 seconds to prevent report from being sent.
   Note: No message appears when turning the button off.
9. Close the button cover on the No.1 SSAS. To test the No.2 and No.3 SSAS, repeat steps 6 to 8.
10. To escape from the test, select [Finish Test Mode] (**Enter**). The buzzer stops and the message "SSAS Buttons returned to NORMAL OPERATION" appears.

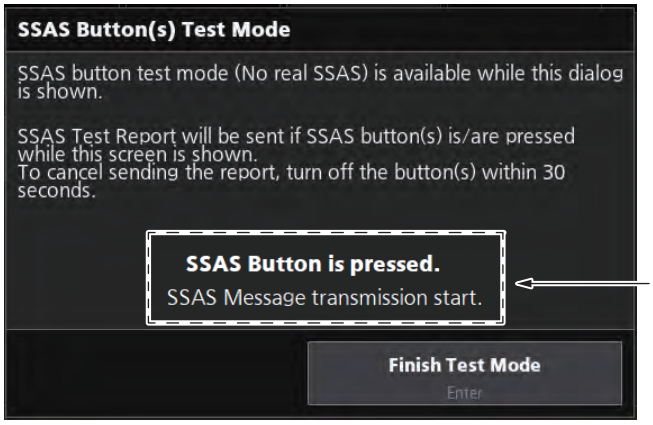
Note: If the button remains pressed in (▙), the message "Please return the SSAS button to the OFF position." appears. Press the button to pop it out (▟).

In case of sending the test report

1. Select [Menu] (**F6**) to open the [Menu] screen.
2. Select [Diagnostics].
3. Select the [Button Test] tab.



4. Select [Start SSAS Button Test] (**Alt** + **S**). A confirmation message appears.
5. Select [OK] (**Enter**). The [SSAS Button(s) Test Mode] window appears.



6. Open the button cover on the No.1 SSAS.
7. Press the button in (▙). The CAUTION window displays the message "SSAS UNIT works correctly." if the unit is functioning properly.
8. 30 seconds after the button is pressed in the SSAS, the information message "Sending SSAS Test Message." is flashed on the screen. The test report is auto-

matically sent to the destination(s) whose mode set on the [Report Mode] window is [Real + Test] or [Test Only].
Note: The SSAS test report is not sent to the destination(s) whose mode set on the [Report Mode] window is [Real Only].

9. Turn the button of the No.1 SSAS off ( ).
10. Close the button cover on the No.1 SSAS. To test the No.2 and No.3 SSAS, repeat steps 6 to 9.
11. To escape from the test, select [Finish Test Mode] (**Enter**). The buzzer stops and the message "SSAS buttons returned to normal operation." appears.

Note: If the button remains pressed in ( ), the message "Please return the SSAS button to the OFF position." appears. Press the button to pop it out ( ).

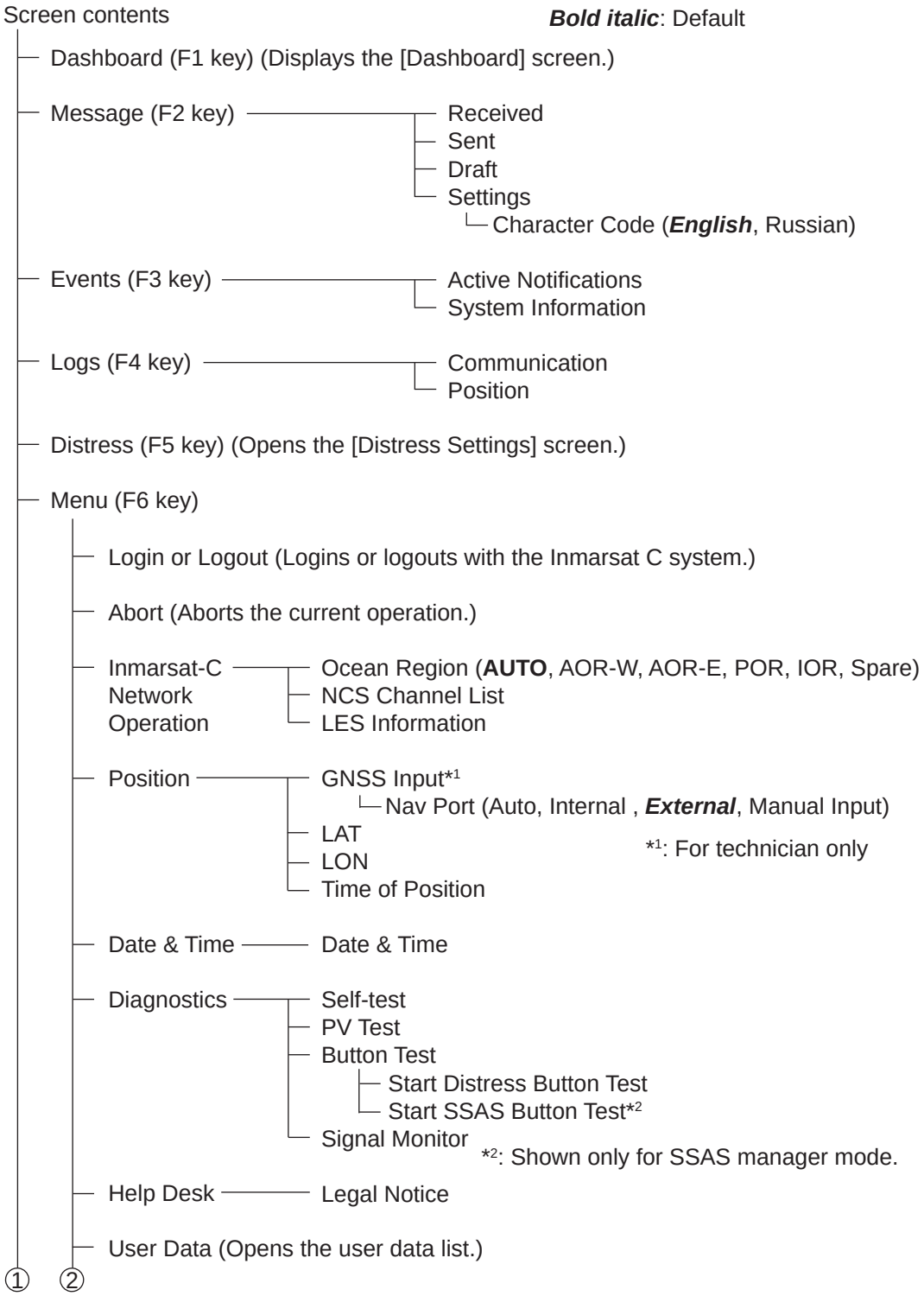
When the SSAS test report is successfully sent, "Successful Sending message" and "DELIVERY CONFIRMED: A specified email address" messages appear. Confirm that the SSAS test report is sent to the destination(s).

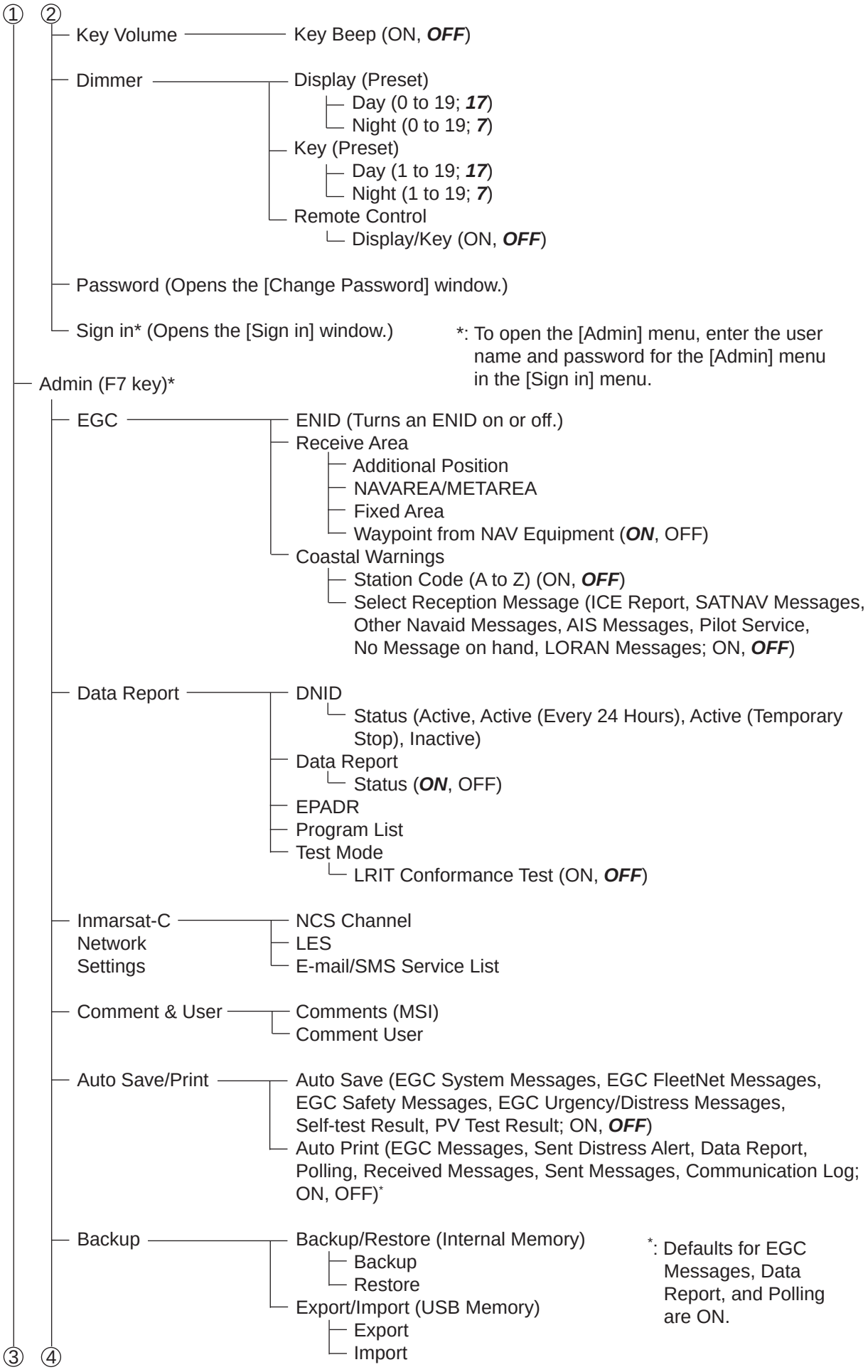
9.6 How to Test the SSAS Report

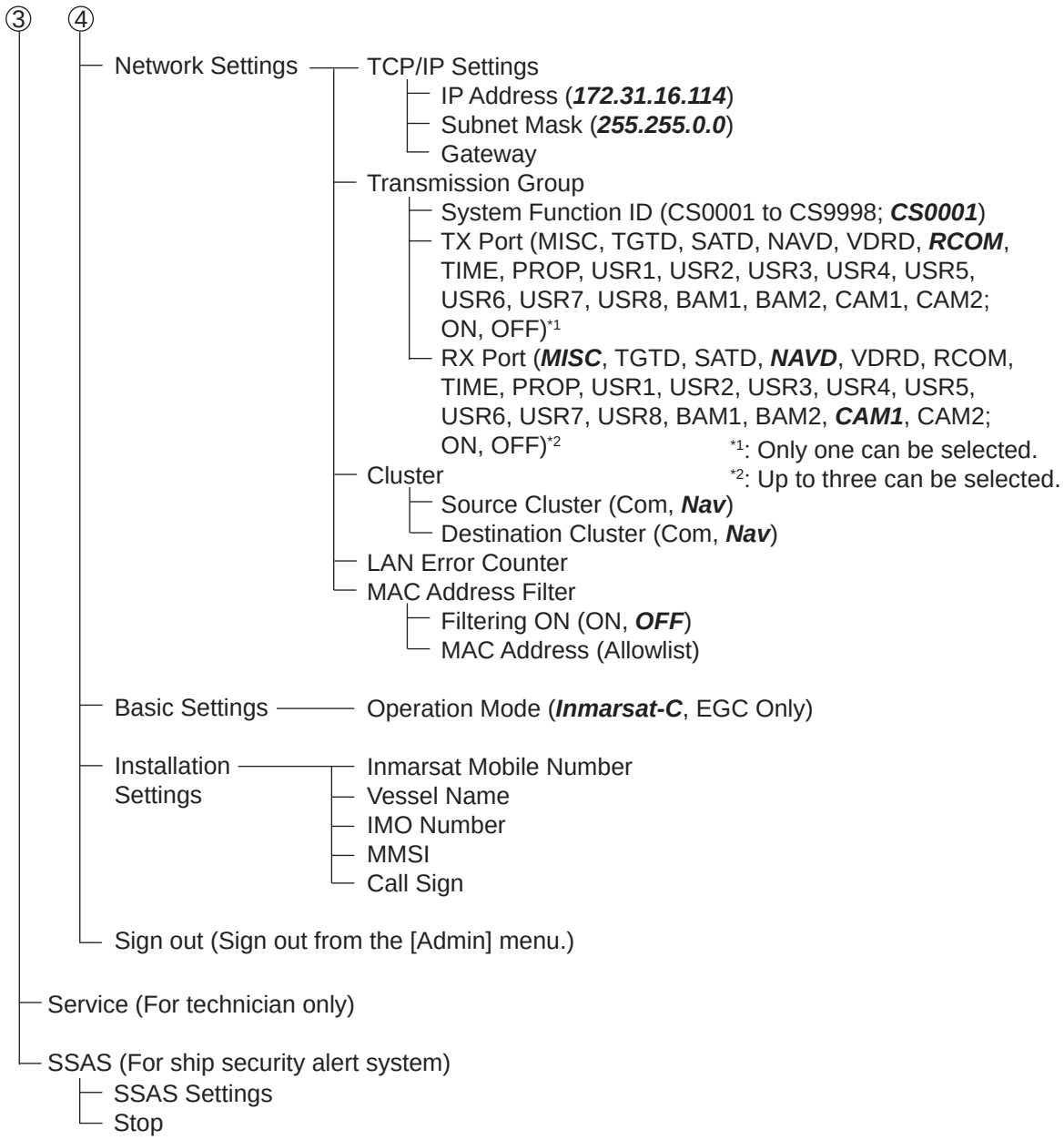
You can test for successful transmission of the SSAS report to the address you specify, without using the button. The test report message states "!!! Test Call !!!" to alert the receiver of the message that it is a test call.

1. Do steps 1 to 11 in section 9.3.
2. Select [Test] (**Alt** + **T**). The confirmation message "Save a destination and send a test message. Are you sure?" appears.
3. Select [OK] (**Enter**) to send a test message to the set destination.

APPX. 1 MENU TREE




①
②
Key Volume
Key Beep (ON, OFF)
Dimmer
Display (Preset)
Day (0 to 19; 17)
Night (0 to 19; 7)
Key (Preset)
Day (1 to 19; 17)
Night (1 to 19; 7)
Remote Control
Display/Key (ON, OFF)
Password (Opens the [Change Password] window.)
Sign in* (Opens the [Sign in] window.)
*: To open the [Admin] menu, enter the user name and password for the [Admin] menu in the [Sign in] menu.
Admin (F7 key)*
EGC
ENID (Turns an ENID on or off.)
Receive Area
Additional Position
NAVAREA/METAREA
Fixed Area
Waypoint from NAV Equipment (ON, OFF)
Coastal Warnings
Station Code (A to Z) (ON, OFF)
Select Reception Message (ICE Report, SATNAV Messages, Other Navaid Messages, AIS Messages, Pilot Service, No Message on hand, LORAN Messages; ON, OFF)
Data Report
DNID
Status (Active, Active (Every 24 Hours), Active (Temporary Stop), Inactive)
Data Report
Status (ON, OFF)
EPADR
Program List
Test Mode
LRIT Conformance Test (ON, OFF)
Inmarsat-C Network Settings
NCS Channel
LES
E-mail/SMS Service List
Comment & User
Comments (MSI)
Comment User
Auto Save/Print
Auto Save (EGC System Messages, EGC FleetNet Messages, EGC Safety Messages, EGC Urgency/Distress Messages, Self-test Result, PV Test Result; ON, OFF)
Auto Print (EGC Messages, Sent Distress Alert, Data Report, Polling, Received Messages, Sent Messages, Communication Log; ON, OFF)*
Backup
Backup/Restore (Internal Memory)
Backup
Restore
Export/Import (USB Memory)
Export
Import
*: Defaults for EGC Messages, Data Report, and Polling are ON.
③
④

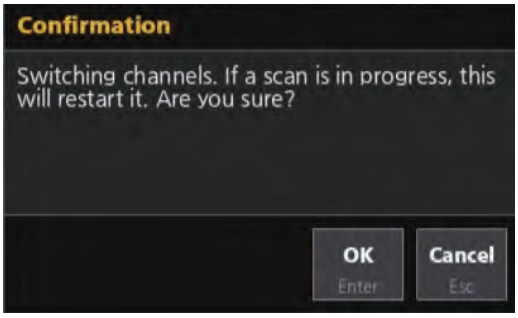

③
④
Network Settings
TCP/IP Settings
IP Address (**172.31.16.114**)
Subnet Mask (**255.255.0.0**)
Gateway
Transmission Group
System Function ID (CS0001 to CS9998; **CS0001**)
TX Port (MISC, TGTD, SATD, NAVD, VDRD, **RCOM**, TIME, PROP, USR1, USR2, USR3, USR4, USR5, USR6, USR7, USR8, BAM1, BAM2, CAM1, CAM2; ON, OFF)*1
RX Port (**MISC**, TGTD, SATD, **NAVD**, VDRD, RCOM, TIME, PROP, USR1, USR2, USR3, USR4, USR5, USR6, USR7, USR8, BAM1, BAM2, **CAM1**, CAM2; ON, OFF)*2
*1: Only one can be selected.
*2: Up to three can be selected.
Cluster
Source Cluster (Com, **Nav**)
Destination Cluster (Com, **Nav**)
LAN Error Counter
MAC Address Filter
Filtering ON (ON, **OFF**)
MAC Address (Allowlist)
Basic Settings
Operation Mode (**Inmarsat-C**, EGC Only)
Installation Settings
Inmarsat Mobile Number
Vessel Name
IMO Number
MMSI
Call Sign
Sign out (Sign out from the [Admin] menu.)
Service (For technician only)
SSAS (For ship security alert system)
SSAS Settings
Stop

APPX. 2 MESSAGES

Below are the various operational messages and their meanings.

[Confirmation] messages

These messages appear in the [Confirmation] window.

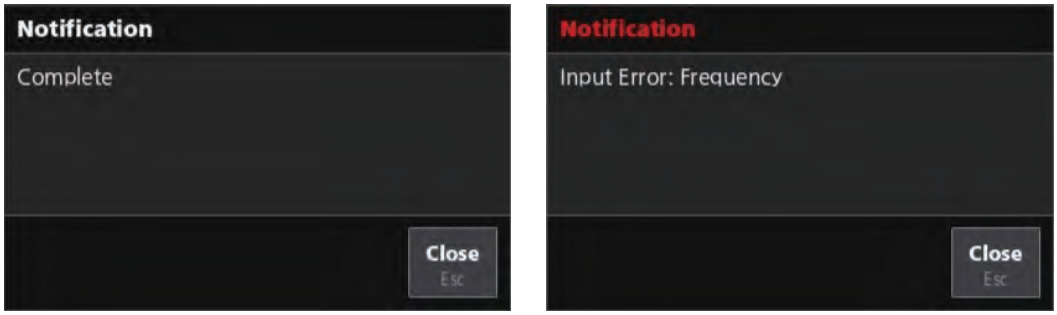


Text	Meaning
Delete the selected item(s). Are you sure?	You are asked if you are sure to delete the selected item(s).
Start export. Are you sure?	You are asked if you are sure to start exporting data.
Start saving. Are you sure?	You are asked if you are sure to start saving user data.
Start printing. Are you sure?	You are asked if you are sure to start printing data.
Start transmission. Are you sure?	You are asked if you are sure to start sending a message.
Cancel sending the selected message. Are you sure?	You are asked if you are sure to cancel sending the selected message.
Send a delivery status request. Are you sure?	You are asked if you are sure to send a delivery status request.
Delete the selected message(s). Are you sure?	You are asked if you are sure to delete the selected message(s).
Do you want to discard the draft, save the message or cancel and go back to transmission options?	You are asked if you are sure to quit creating a message.
Manually input LAT/LON is maintained for one hour or until a Distress Call is sent, whichever is sooner. Navigational Data used in Distress Alerts is not automatically updated during this time. Are you sure?	This message appears when manually inputting latitude/longitude on the [Distress Settings] screen.
Start scanning. If a scan is in progress, this will restart it. Are you sure?	You are asked if you are sure to restart scanning satellite.
Starting automatic test mode: Normal communication disabled. Do not press any distress buttons unless you are in distress. Are you sure?	You are asked if you are sure to start PV test.
All contacts will be replaced. Continue?	You are asked if you are sure to start importing contacts.

Text	Meaning
All settings will be replaced. Continue?	• You are asked if you are sure to start settings backup. • You are asked if you are sure to start importing settings.
The oldest settings will be deleted. Are you sure?	You are asked if you are sure to delete the oldest settings.
Login process starting. Are you sure?	You are asked if you are sure to log in to Inmarsat network.
Logout process starting. Are you sure?	You are asked if you are sure to log out from Inmarsat network.
Abort INMARSAT-C NW transmissions. Are you sure?	You are asked if you are sure to abort transmission to Inmarsat network.
Switching channels. If a scan is in progress, this will restart it. Are you sure?	You are asked if you are sure to switch channels.
GMDSS must be equipped with a printer. Are you sure you want to turn this setting off?	You are asked if you are sure to turn a printer off.
Send a test message to a destination whose mode is Real / Test or Test only. Continue?	You are asked if you are sure to send a test message.
Changing to the default LES for sending E-mail/SMS messages. Are you sure?	You are asked if you are sure to change LES to default one.
In EGC Only mode, cannot send Normal and Distress priority message and Data Report. Are you sure?	You are asked if you are sure to switch operation mode to [EGC Only].

[Notification] messages

These messages appear in the [Notification] window.



Type: error

Text	Meaning
Please return the SSAS button to the OFF position.	Turn the SSAS button off.
The list is full.	The number of registrations in the list is over the limit.
No destination set.	Destination is not set.
No LES set.	LES is not set.
Too many destinations.	The number of multiple addresses is over the limit.
E-mail service is not supported by the LES in this region.	LES is not supported in this region.
No address or Station ID set.	Address or station ID is not set.
Message size is too large.	Message size is over the limit.

Text	Meaning
File already exists	File name already exists.
Enter a file name.	Enter a file name.
Invalid user code. Check credentials.	User name and personal code do not match.
Value is used.	Value is already used.
Invalid value(s).	Value(s) is/are invalid.
Passwords do not match.	Password for confirmation does not match.
No response from the modem unit.	No response from the modem unit.
File read error. Try again.	File could not be read. Try again.
File write error. Try again.	File could not be written. Try again.
The file does not exist.	File does not exist.
Read error. Try again.	Data could not be read. Try again.
Write error. Try again.	Data could not be written. Try again.
Ignored: Format Error.	This operation cannot be done.
Ignored: Undefined Command.	This operation cannot be done.
Ignored: Can not abort current process.	Current process could not be aborted.
Ignored: Can not Forced Clear current process.	Current process could not be force-quitted.
Ignored: Awaiting message transfer, Can not start PV TEST.	PV test could not be started because a message is currently being sent.
Ignored: PV TEST has already been started, and now pending.	PV test has already started, and it is currently pending.
Ignored: Cannot start Distress Alert Test now.	Distress alert test cannot be started.
Ignored: MES is not idle.	MES is busy.
Ignored: Now receiving EGC message.	EGC message is being received.
Ignored: MES not logged in. Please login.	MES is not logged in. Login.
Ignored: Network is in restoration mode.	Network is being restored.
Ignored: Invalid request.	NCS CC is failed.
The maximum number of destinations that can be specified has been exceeded.	The number of SSAS destinations is over the limit.
Input Error: Date or Time	Invalid date or time is entered.
Input Error: Geographical Coordinate	Invalid geographical coordinate is entered.
Input Error: Navarea Code	Invalid navarea code is entered.
Input Error: Course Data	Invalid course data is entered.
Input Error: Speed Data	Invalid speed data is entered.
Device other than a keyboard detected in keyboard USB port.	Device other than a keyboard is connected to the keyboard USB port.
Device other than a flash memory USB detected in flash memory port.	Device other than a USB flash memory is connected to the flash memory port.

Type: notice

Text	Meaning
Completed.	Processing is completed.
Printed.	Printing is completed.
Completed. System restarting, please wait.	FELCOM20 restarted after service/factory reset.
Successfully imported setting data	Setting data is imported.
Successfully exported setting data	Setting data is exported to a USB flash memory.
SSAS buttons returned to normal operation.	SSAS buttons are returned to normal operation.
Login aborted.	Login is aborted.
Logout aborted.	Logout is aborted.
Sending message aborted.	Sending message is aborted.

Text	Meaning
Failed to obtain ip address from dhcp server.	IP address cannot be obtained from DHCP server.

[Information] messages

See subsection 8.8.3.

Message received

See page 2-21.

APPX. 3 ABBREVIATIONS/ICONS

Abbreviations

Abbreviation	Meaning
%	Percentage
°	Degree
°C	Celsius
2D	2 dimensional (position fix)
3D	3 dimensional (position fix)
ACK	Acknowledge
ACQ	Acquiring
Act	Activate
ADMIN	Administrator
AGC	Automatic Gain Control
AIS	Automatic Identification System
ALM	Almanac
ALT	Alternate Key
AMER	America
Ant	Antenna
AOR	Atlantic Ocean Region
AORE, AOR-E	Atlantic Ocean Region-East
AORW, AOR-W	Atlantic Ocean Region-West
APAC	Asia Pacific
Apr.	April
Ascii, ASCII	American Standard Code for Information Interchange
Aug.	August
BAM	Bridge Alert Management
BBER	Bulletin Board Error Rate
bps	bits per second
BRILL	Brilliance
C/N	Carrier to Noise ratio
Cat.	Category
CC	Common Channel
Ch, Ch.	Channel
Char.	Character
Cmd	Command
CMIIT	China Ministry of Industry and Information Technology
COG	Course Over Ground
Com	Communication
CPU	Central Processing Unit
CST	Cold Start
Ctrl	Control
D	Day
dB	Decibel
DBT	Depth below the transducer
DCE	Data Circuit Terminating Equipment
Dec.	December

Abbreviation	Meaning
Deg	Degree
DEL	Delete
Dir	Directory
DNID	Data Network Identity Number
DOP	Dilution of Precision
DR	Data Report
DTE	Data Terminal Equipment
E	East
EDR	Enhanced Data Rate
EEPROM	Electrically Erasable Programmable Read-Only Memory
EGC	Enhanced Group Call
EMEA	Europe, the Middle East and Africa
eMMC	embedded Multi Media Card
ENID	EGC Network Identity Number
EPADR	Enhanced Pre-Assigned Data Report
Esc	Escape
EXT	External
FAX	Facsimile (receiver)
Feb.	February
Freq.	Frequency
FUNC	Function
GLONASS	Global Navigation Satellite System
GMDSS	Global Maritime Distress Safety System
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
h	hour
Hz	Hertz
IA5	International Alphabet No. 5
IC	Integrated Circuit
ID	Identification
I/F	Interface
IMN	Inmarsat Mobile Number
IMO	International Maritime Organization
IMP	Impossible
INF, Info.	Information
Ins.	Insert
INT	Internal, Interrupted
IOR	Indian Ocean Region
IP	Internet Protocol
ITA2	International Telegraph Alphabet No. 2
IWU	Inter Working Unit
Jan.	January
Jul.	July
Jun.	June
KDDI	Kokusai Denshin Denwa International
kn	Knot, Knots
LAN	Local Area Network
LAT	Latitude
LED	Light Emitting Diode

Abbreviation	Meaning
LES, LESs	Land Earth Station(s)
LON	Longitude
LORAN	Long-Range Navigation
LRIT	Long Range Identification and Tracking
m	meter, minute
M	Month
MAC	Media Access Control
May.	May
Mar.	March
MES	Mobile Earth Station
Meteo.	Meteorological
MIME	Multipurpose Internet Mail Extensions
min	Minutes
MLIT	Ministry of Land, Infrastructure, Transport and Tourism
MMSI	Maritime Mobile Service Identity
Msg	Message
MSI	Maritime Safety Information
N	North
N/A	Not Applicable
NAV	Navigation
NAVAREA	Navigation Area
NAVTEX	Navigation Telex
NCS	Network Coordination Station
NG	No Good
No.	Number
Nov.	November
NW	Network
OCC	Operation Control Center
Oct.	October
Op.	Operation
P	Print
PADR	Pre-Assigned Data Report
PDU	Power Distribution Unit
PIN	Personal Identification Number
POLL	Polling
POR	Pacific Ocean Region
Pos.	Position
Pri.	Priority
PSDN	Public Switched Data Network
PSTN	Public Switched Telephone Network
PV	Performance Verification
PVT	Performance Verification Test
RAM	Random Access Memory
RCC	Rescue Coordination Centre
RCV	Received
Rec, REC.	Receive, Received
Ref.	Reference
REQ	Request
RF	Radio Frequency

Abbreviation	Meaning
RFCON	Radio Frequency Converter
ROM	Read-Only Memory
RX, Rx	Receive
S	South, Send, Save
SATNAV	Satellite Navigation System
SCC	Satellite Control Center
sec	second
Sep.	September
Seq.	Sequential
SER.	Serial
SIG, Sig	Signal, Signaling
SMS	Short Message Service
SMTP	Simple Mail Transfer Protocol
SOG	Speed Over Ground
S.S.	Space Systems
SSAS	Ship Security Alert System
SYNC, Sync	Synchronize, Synchronized
Synthe	Synthesizer
T30FAX	T.30 Fax
TCXO	Temperature Compensated Crystal Oscillator
TDM	Time Division Multiplexing
TELEX	Teletype Exchange Service
TERM	Terminal
TERMCPU	Terminal Central Processing Unit
TX, Tx	Transmit (send)
Unack	Unacknowledge
UNSYNC	Unsynchronized
USB	Universal Serial Bus
UTC	Universal Time Coordinate
UUENCODE	Unix-to-Unix encode
V.	Version
W	West
WMO	World Meteorological Organization

Icons

Icons	Meaning
	Processing.
	System operating normally.
	Radio field intensity.
	Unread message.
	Communication failed.
	Print.
	Save.
	Opens the MSI (EGC) list or the active Alert list.
	Audio alarm muted.
	Transmitting.
	Distress priority.
	Multiple destinations.
	Active unacknowledged warning.
	Active silenced warning.
	Active acknowledged warning.
	Active responsibility transferred warning.
	Rectified unacknowledged warning.
	Active caution.
	Background warning.
	Background caution.

APPX. 4 INTERNATIONAL TELEX/ TEL. COUNTRY CODE LIST, LES LIST

International Telex/Telephone Country Code List

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Afghanistan	93	79	
Alaska	1	200	
Albania	355	604	
Algeria	21	408	
American Samoa	684	770	
American Virgin Is.	1	208	Telex calls to former WUI subscribers, insert the figure "9" after the destination code "208".
Andorra	33	590	
Angola	244	991	
Anguilla	1	391	
Antigua & Barbuda	2	393	
Argentina	54	33	Disregard the figure "0" at head of subscriber number.
Armenia	7	684	
Aruba	297	303	Subscriber numbers are 2XXX or 5XXX
Ascension	247	939	Manual calls 3XXX
Australia	61	71	
Australian External Territories	672	766	
Austria	43	47	
Azerbaijani	994	784	
Azores Is.	351	404	Destination code is the same as for Portugal.
Bahamas	1	297	
Bahrain	973	490	
Bangladesh	880	780	
Barbados	1	392	
Belarus	7	681	
Belgium	32	46	
Belize	501	371	
Benin	229	972	
Bermuda	1	290	
Bhutan	975	890	
Bolivia (Rep. of)	591	371	
Bolivia (ENTAL)		309	
Bosnia-Hercegovina	387	600	
Botswana	267	962	
Brazil	55	38	Disregard the figure "0" at head of subscriber number.
British Virgin Is.	1	292	
Brunei Darussalam	673	809	
Bulgaria	359	67	
Burkina Faso	226	978	
Burundi	257	903	

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Cambodia	855	807	Kampuchea Rep.
Cameroon	237	970	
Canada	1	21	Disregard the figure "0" at head of subscriber number.
		26	
Canary Is.	34	52	Destination code is the same as for Spain.
Cape Verde	238	993	
Cayman Is.	1	293	
Central Africa Rep.	236	971	
Chad	235	976	
Chile	56	34	TCH subscribers 2XXXXX ENTEL subscribers 5XXXXX TRA subscribers 3XXXXX TECOM subscribers 6XXXXX VTR CM subscribers 4XXXXX
China	86	85	
Christmas Is. (Aus)	672	766	
CIS (formerly USSR)	7	64	
Cocos-Keeling Is.	672	766	
Colombia	57	35	Disregard the figure "0" at head of subscriber number.
Comoros	269	994	Manual calls
Congo	242	981	
Cook Is.	682	772	
Costa Rica	506	376	
Cote d'Ivoire	225	983	Ivory Coast
Croatia	385	599	
Cuba	53	28	
Cyprus	357	605	
Czechoslovakia	42	66	
Denmark	45	55	
Diego Garcia	246	938	
Djibouti	253	979	
Dominica	1	394	
Dominican Rep.	1	201	RCA subscribers 4XXXXX
		202	For subscriber number beginning with 346, disregard "346" at head of subscriber number.
		241	AGEM IR subscribers 61XX
Ecuador	593	308	
Egypt	20	91	
El Salvador	503	373	
Estonia (formerly USSR)	372	537	
Ethiopia	251	980	

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Falkland Is. (Malvinas)	500	306	
Faroe Is.	298	502	
Fiji	679	701	
Finland	358	57	
France	33	42	
French Guiana	594	300	
French Polynesia	689	702	
Gabon	241	973	
Gambia	220	996	
Georgia	7	683	
Germany (Fed, Rep. of)	49	69	
	49	41	
Ghana	233	94	
Gibraltar	350	405	
Greece	30	601	
Greenland	299	503	
Grenada	1	395	
Guadeloupe	590	299	
Guam (RCA)	671	700	
Guatemala	502	372	
Guiana	594	300	
Guinea Conakry	224	995	Manual calls
Guinea Bissau	245	969	
Guyana	592	295	
Haiti	509	203	RCA subscribers 9XXX
		704	RCA subscribers 8XXX or 2968XX
		705	ITT subscribers 743XXX
Hawaii	1	708	WUI subscribers 63XXX or 63XXXX
		709	WUH subscribers 39XXXX
		(773)	Telex calls to HTC subscribers can be made using Semi-automatic calls.
Honduras	504	374	
Hong Kong	852	802	
Hungary	36	61	
Iceland	354	501	
India	91	81	
Indonesia	62	73	Disregard the figure "0" at head of subscriber number.
Iran	98	88	
Iraq	964	491	
Ireland	353	500	
Israel	972	606	Disregard the figure "0" at head of subscriber number.
Italy	39	43	

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Jamaica	1	291	
Japan		72	KDDI (for 5 digits)
	81		NTT
Jordan	962	493	
Kazakhstan	7	785	
Kenya	254	987	
Kiribati	686	761	Subscriber numbers are 770XX
Korea (Demo, People's Rep. of)	850	(899)	
Korea (Rep. of)	82	801	
Kuwait	965	496	
Kyrgyzstan	7	788	
Lao	856	804	
Latvia (formerly USSR)	371	538	
Lebanon	961	494	
Lesotho	266	963	
Liberia	231	997	
Libya	21	901	
Liechtenstein	41	45	
Lithuania (formerly USSR)	370	539	
Luxembourg	352	402	
Macao	853	808	
Macedonia	389	597	
Madagascar	261	986	Subscriber number beginning with 4, 5, 7, 8 and 9 can be reached by Manual Calls.
Madeira Is.	351	404	Destination code is the same as for Portugal.
Malawi	265	904	
Malaysia	60	84	
Maldives Is.	960	896	
Mali	223	985	
Malta	356	406	Subscriber number beginning with 11XX can be reached by Semi-automatic calls.
		403	
Mariana Is.	671	760	
Marshall Is.	692	765	
Martinique	596	298	
Mauritania	222	974	
Mauritius	230	966	
Mexico	52	22	Disregard the figure "0" at head of subscriber number.
Micronesia	691	764	
Moldova	373	682	
Monaco	33	42	Destination code is the same as for France.
Mongolia	976	800	

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Montserrat	1	396	
Morocco	21	407	
Mozambique	258	992	
Myanmar (formerly Burma)	95	83	
Namibia	264	908	
Nauru	674	775	
Nepal	977	891	
Netherlands	31	44	
Netherlands Antilles	599	390	
New Caledonia	687	706	
New Zealand	64	74	
Nicaragua	505	375	
Niger	227	975	2XXXX other numbers are for Semi-automatic calls.
Nigeria	234	905	
Niue Is.	683	776	
Northern Mariana Is.	670		
Norfolk Is.	672	766	
Norway	47	56	
Oman	968	498	
Pakistan	92	82	
Palau	680	763	
Panama	507	377	TRT subscribers
		378	AACR subscribers
		379	INTEL subscribers
Papua New Guinea	675	703	
Paraguay	595	305	
Peru	51	36	
Philippines	63	75	PHILCOM subscribers 2XXXX RCPI subscribers 7XXXX GMCR subscribers 4XXXX ETPI subscribers 6XXXX CAPWIRE subscribers 1XXXX For PTT subscribers, insert the figure "8" after the destination code "75".
Poland	48	63	Disregard the figure "0" at head of subscriber number.
Portugal	351	404	
Puerto Rico	1	205	RCA subscribers 2XXX
		206	ITT subscribers 345XXX
		207	C&W, WUI subscribers
		209	ACPR (PRCA) subscribers
Qatar	974	497	

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Reunion	262	961	Subscriber numbers are 916XXX
Romania	40	65	Disregard the figure "0" at head of
Russian Federation	7	64	subscriber number.
Rwanda	250	909	
Saipan	670	760	
San Marino	378	505	
Sao Tome & Principe	239	967	
Saudi Arabia	966	495	Manual calls
Senegal	221	906	
Seychelles	248	965	
Sierra Leone	232	998	
Singapore	65	87	
Slovak	42	66	
Slovenia	386	598	
Solomon Is.	677	778	
Somalia	252	900	
South Africa	27	95	Cape Town subscribers XXXXXX Bophuthatswana subscribers 08XXXX Transkei subscribers 09XXX
Spain	34	52	
Spanish North Africa	34	52	
Sri Lanka	94	803	
St. Helena	290	(960)	Manual calls 4XXX
St. Kitts & Nevis	1	397	
St. Lucia	1	398	
St. Pierre & Miquelon	508	204	
St. Vincent & the Grenadines	1	399	
Sudan	249	984	
Suriname	597	304	
Swaziland	268	964	
Sweden	46	54	
Switzerland	41	45	
Syria	963	492	
Tajikistan	7	787	
Taiwan	886	769	
Tanzania	255	989	
Thailand	66	86	
Togo	228	977	
Tokelau	690	762	
Tonga	676	777	
Trinidad & Tobago	296	294	
Tunisia	21	409	
Turkey	90	607	
Turkmenistan	7	789	

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Turks & Caicos Is.	1	296	
Tuvalu	688	774	
U. A. E.	971	893	
Abu Dhabi			2XXXX, 3XXXX, 5XXXX
Ajman			695XX
Dubai			4XXXX
Fujairah			8XXXX
Ras Al Khaimah			9XXXX
Sharjah			68XXX
Umm Al Qaiwain			697XX
Uganda	256	988	
Ukraine	7	680	
United Kingdom	44	51	
United Arab Emirates	971	893	
Upper Volta	226	978	Same as "Burkina Faso".
Uruguay	598	32	
Uzbekistan	7	786	
U. S. A.	1	23	CCI subscribers 7XXXXXX ITT subscribers 4XXXXX, 4XXXXXX, 4XXXXXXXXX RCA subscribers 2XXXXX WUI subscribers 6XXXX, 6XXXXX, 6XXXXXX
U. S. A. (Mainland)		23	TRT subscribers 1XXXXX, 1XXXXXXXXX FTCC subscribers 8XXXX, 8XXXXX GRPHNET subscribers 36XXXXX, 37XXXXX For WUT subscribers, insert the figure "0" after the destination code "23".
		25	Telex calls to TWX subscribers whose numbers do not contain "0" as the third figure of the 10 figure code can be made as Semi-automatic calls.
U. S. S. R. (Former)	7	640	Russian Federation
Vanuatu	678	771	
Vatican	379	504	
Venezuela	58	31	
Viet Nam	84	805	Subscriber number beginning with 561XXX can be made using manual calls
Wallis & Futuna Is.	681	707	
Western Samoa	685	779	
Yemen (Rep. of)	969	806	Formerly Yemen (P. D. Rep. of)
Yugoslavia (Former)	967	895	Formerly Yemen (Arab Rep.)

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Zaire	243	982	Telex calls to places other than Kinshasa Subscriber beginning with 2XXXX can be made as Semi-automatic calls
Zambia	260	902	
Zanzibar	259	990	
Zimbabwe	263	907	
Ocean Area	**Telephone Ocean Region Access Code**	**Telex Ocean Region Access**	**Remarks**
AOR-W	874	584	Atlantic Ocean-W
AOR-E	871	581	Atlantic Ocean-E
POR	872	582	Pacific Ocean
IOR	873	583	Indian Ocean

LES List

Land earth station operator	Country	AOR-W (AMER)	AOR-E	POR (APAC)	IOR (EMEA)
Inmarsat Solutions (Burum)	Netherlands	002	102	202	302
Inmarsat Solutions (Burum2)	Netherlands	012	112	212	312
KDDI	Japan	003	103	203	303
Marlink (Aussaguel)	France	021	121	221	321
Marlink (Eik)	Norway	004	104	204	304
Marsat (Nudol)	Russia	–	–	217	317
MCN (Beijing)	China	–	–	211	311
Southbury	USA	001	101	201	301
Telecom Italia	Italy	–	105	–	335
Vishipel (Haiphong)	Vietnam	–	–	230	–
VSNL (Pune)	India	–	–	206	306

APPX. 5 INTERNATIONAL TELEX ABBREVIATIONS, INTERNATIONAL TELEGRAPHY ALPHABET

International Telex Abbreviations

Abbreviation	Meaning
ADV	Advise
ACK	Acknowledge
AGN	Again
BI(GS)	Good bye
BK	I cut off.
CFN	Confirm
COL	Collation
CRV	How do you receive?
DER	Out of order
DWN	Down
EEE	Error
FM	From
GA	Go ahead
MNS	Minutes
MOM	Wait(Waiting)
MUTI	Mutilated
NA	Correspondence to this subscriber is not admitted.
NC	No circuits
NCH	Subscriber's number has been changed.
NP	The called party is not or is no longer a subscriber.
NR	Indicate your call number.
OCC	Subscriber is engaged.
OK	Agreed
P (or O)	Stop your transmission.
PLS (PSE)	Please
PPR	Paper
P (RCD)	Received
RAP	I will call again
RD	Read
RE	Referring to
RPT	Repeat
SRY	Sorry
SVP	Please
TAX	What is the charge?
TEST MSG	Please send a test message.
THRU	You are in communication with telex position.
TKS (TNX)	Thanks
TLX	Telex

International Telegraphy Alphabet

No.	FIGURES	LETTERS	No.	FIGURES	LETTERS
1	–	A	17	1	Q
2	?	B	18	4	R
3	:	C	19	'	S
4	✣*	D	20	5	T
5	3	E	21	7	U
6	□*	F	22	=	V
7	▬*	G	23	2	W
8	▨*	H	24	/	X
9	8	I	25	6	Y
10	BELL*	J	26	+	Z
11	(	K	27	CARRIAGE RETURN	
12	)	L	28	LINE FEED	
13	.	M	29	LETTERS	
14	,	N	30	FIGURES	
15	9	O	31	SPACE	
16	0	P	32	BLANK	

* = Cannot be entered.

APPX. 6 ALERT LIST

The table below shows the alert message that may appear.

Alert ID	Displayed Message	Text	Priority/ Category	Meaning	Remedy
3008*1	Lost TX Power	TX power level not within specified range. Have a licensed radio communications technician check the set.	Warning/B	Carrier power level too high or too low.	Have a licensed radio communications technician check the equipment.
3009*2			Caution/B	–	
3009-1	Lost DIST UNIT	DISTRESS ALERT UNIT disconnected. Check that the unit is powered and connected to the FELCOM.	Caution/B	Problem with the Distress Alert Unit (IC-305).	Check that the unit is connected to this system.
3009-2	Lost ALARM UNIT	ALARM UNIT disconnected. Check that the IC-306 is powered and connected to the FELCOM.	Caution/B	Problem with the Alarm Unit (IC-306).	Check that IC-306 is powered and connected to the FELCOM.
3009-3	Lost SSAS UNIT	SSAS UNIT disconnected. Check that the IC-307 is powered and connected to the FELCOM.	Caution/B	Problem with the SSAS Unit (IC-307).	Check that IC-307 is powered and connected to the FELCOM.
3013	Doubtful position	Manual position data has not been updated within 4 hours, please update current position.	Caution/B	No positioning data for four hours.	Update the positioning data.
3016*2			Caution/B	–	
3016-1	Lost position	Internal GPS UNIT failure. If the condition often occurs, the internal GPS unit may be faulty. Have a qualified technician check the set.	Caution/B	Problem with the internal GPS unit.	Have a qualified technician check the equipment.
3016-2	Lost position	External NAV equipment failure. Check the position-fixing equipment.	Caution/B	Problem with the external position-fixing equipment.	Check the position-fixing equipment.
3016-3	Lost position	Position data has not been updated for more than 10 minutes. Check the GNSS settings or position-fixing equipment.	Caution/B	No positioning data for 10 minutes.	Check the GNSS settings or equipment.

Alert ID	Displayed Message	Text	Priority/ Category	Meaning	Remedy
3079	PRINTER ERROR	Can't print. Printer not ready. (Offline / Paper Low) Check that the printer is powered and connected.	Caution/B	Cannot print.	Check that printer is powered and connected. Also check the paper supply.
3115[*1]	Impaired radio	ANT power voltage abnormality. Have a licensed radio communications technician check the set.	Warning/B	Antenna power voltage out of ratings.	Have a licensed radiocommunications technician check the equipment.
3116	Impaired radio	Common channel synchronization failed/lost. Please check the current Ocean Region. Scan another ocean region.	Caution/B	Your station is not synchronized with NCS common channel.	Check the current Ocean Region. Scan another Ocean Region.
3122[*2]			Warning/A	–	
3122-1[*1]	Distress Msg RX	Distress Priority Message received. Check the Received Message Window.	Warning/A	Distress message received.	Check the contents of the message.
3122-2[*1]	Distress RX	Distress Priority EGC Message received. Check the MSI Message Window.	Warning/A	Distress EGC message received.	Check the contents of the message.
3122-3[*1]	Urgency RX	Urgency Priority EGC Message received. Check the MSI Message Window.	Warning/A	Urgent EGC message received.	Check the contents of the message.
3123	Safety RX	Safety EGC Message received. Check the MSI Message Window.	Caution/B	Safety EGC message received.	Check the contents of the message.
630003	BBER OVER	BBER over 80%. Scanning NCS start manually.	Caution/B	BBER (Bulletin Board Error Rate) exceeded 80%.	BBER over 80%. Select NCS manually.
630010	INVALID MES ID	The MES ID of this terminal is invalid, this equipment is defective. Please contact FURUNO Service.	Caution/B	MES ID is corrupted.	Ask your dealer to repair the equipment.
630050	EEPROM ERROR	EEPROM ERROR. Have a licensed radio communications technician check the set.	Caution/B	Problem with EEPROM.	
630200	1ST LOCAL UNLOCK	1st Local PLL unlocked. Have a licensed radio communications technician check the set.	Caution/B	1st local circuit is unlocked.	Have a licensed radiocommunications technician check the equipment.

Alert ID	Displayed Message	Text	Priority/ Category	Meaning	Remedy
630201	2ND LOCAL UNLOCK	2nd Local PLL unlocked. Have a licensed radio communications technician check the set.	Caution/B	2nd local circuit is unlocked.	Have a licensed radiocommunications technician check the equipment.
630643	DISTRESS button error	DISTRESS button is stuck to ON. Have a licensed radio communications technician check the set.	Caution/B	Problem with the DISTRESS button.	Have a qualified technician check the equipment.
630903	Audit log fail	Audit log fail. Check the audit log.	Caution/B	Cannot save the audit log.	Have a licensed radiocommunications technician check the equipment.
630906	Network overload	Network overload. Check other devices in the network.	Caution/B	Network overload on the LAN interface.	Check the network referring to section 8.10.1.

*1: The transfer of responsibility is allowed. See page AP-26 regarding the responsibility transfer alert.

*2: This alert is aggregated.

Alert icons

The table below shows the icons that may appear.

Note: If more than one alert has occurred, the icon corresponding to the alert of highest priority is displayed.

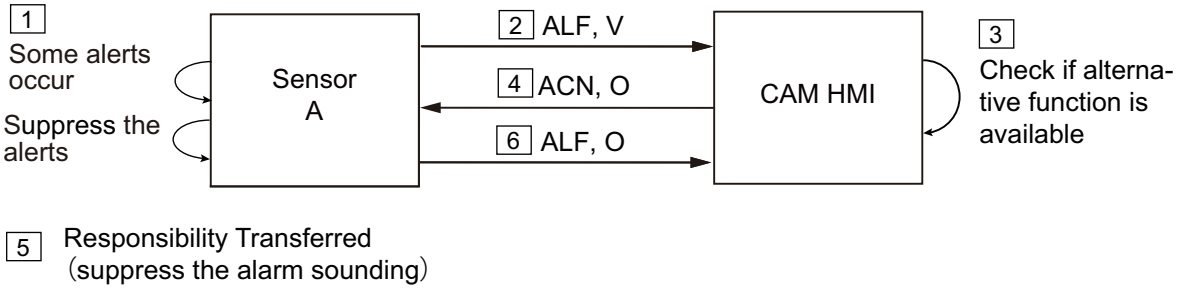
Alert	Icon
Warning occurring (not confirmed in pop-up message).	(flashing)
Warning occurring (buzzer stopped by BAM system).	(flashing)
Warning occurring (confirmed in pop-up message).	
Warning occurring (Responsibility Transferred status).	
Warning resolved (not confirmed in pop-up message).	
Caution occurring.	
Warning occurring (not displayed in the alert message area).	(flashing)
Caution occurring (not displayed in the alert message area).	

Responsibility Transfer

IEC 62923 requires the use of the “responsibility transfer” function to reduce unnecessary alerts when some alternative function is available.

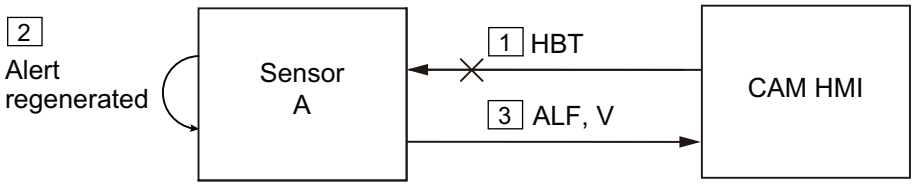
Below is the responsibility transfer flow in text and figure.

1. Warning is generated.
2. This equipment sends ALF with a state of “V” (active unacknowledged) to CAM.
3. CAM Checks if any alternative function is available.
4. CAM HMI sends “responsibility transfer command” ACN,O.
5. Alarm sound is suppressed and alert changes to responsibility transferred state.
6. ALF with a state of “O” (active responsibility transferred) is sent to CAM.



Cancel Responsibility Transfer

1. CAM HMI does not send HBT sentence to Sensor A in specified time-out period.
2. Sensor A regenerates the warning.
3. It sends ALF with a state of “V” (active unacknowledged) to CAM HMI.
   Note the following concerning Responsibility Transfer:
   - When a Responsibility Transferred alert is acknowledged, the alert state becomes “Acknowledged.”
   - When the cause of a Responsibility Transferred alert is resolved, the alert state becomes “Normal.”
   - Category A alerts reject Responsibility Transfer. (ARC sentence is sent.)



APPX. 7 RADIO REGULATORY INFORMATION

Innovation, Science and Economic Development Canada (ISED)

Caution: Exposure to Radio Frequency Radiation
This equipment complies with ISED radiation exposure limits set forth for a controlled environment and meets RSS-102 of the ISED radio frequency (RF) Exposure rules. This equipment should be installed and operated keeping the radiator at least 40 cm or more away from person's body.

Cet équipement est conforme aux limites d'exposition aux rayonnements définies pour un environnement contrôlé et respecte les règles d'exposition aux fréquences radioélectriques (RF) CNR-102 de l'ISED. Cet équipement doit etre installé et utilisé en maintenant une distance de 40 cm ou plus entre le dispositif rayonnant et le corps.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication.

SPECIFICATIONS OF INMARSAT-C MES
FELCOM20

1 GENERAL

1.1	Transmitting frequency	1626.5 to 1646.5 MHz
1.2	Receiving frequency	1537.0 to 1544.2 MHz
1.3	Channel interval	5 kHz
1.4	G/T	Better than -23 dB/K (elevation angle 5°)
1.5	EIRP	12 to 16 dBW (elevation angle 5°)
1.6	Modulation	BPSK
1.7	Modulation rate	600/1200 sps
1.8	Coding	Convolution with coding rate 1/2 and constraint length 7
1.9	Decoding	Viterbi decoder
1.10	EGC receiver	Built in (EGC: Enhanced Group Call)
1.11	LRIT function	Standard

2 ANTENNA UNIT

2.1	Antenna type	Daisy loop antenna
2.2	Receiving gain	40.1±10 dB
2.3	Receiving NF	2.08 dB or less
2.4	Transmitting gain	30.3 to 43 dB
2.5	Polarization	Right-hand circular polarization
2.6	Axial ratio	Within 6 dB (5° to 90°)
2.7	VSWR	2.0 or less (50 ohm)

3 TERMINAL UNIT

3.1	Display	10.4” color TFT LCD, 800 x 600 (SVGA) Touch screen user interface
3.2	Pixel pitch	0.264 (W) x 0.264 (H) mm
3.3	Brilliance	20 steps
3.4	Visible distance	0.9 m nominal
3.5	Internal speaker	75 to 85 dB (within 1 m in front)

4 INTERFACE

4.1	Number of port	
	Serial	1 ch, Input only: 1, IEC61162-1
	Alarm	1 ch (Distress alert, Alarm unit)
	Alarm (output)	1 ch, Contact closure, Normal close
	SSAS I/O	1 ch, RS-485, 1200 bps
	LAN	1 port, Ethernet 100Base-TX, RJ45 connector
	USB	2 port, USB2.0 for keyboard/external memory
4.2	Data sentences	
	IEC61162-1	
	Input	BWC, BWR, DBT, DTM, GGA, GLL, GNS, MTW, RMA, RMB, RMC, VDO, VDR, VTG, WPL, ZDA

IEC61162-450, IEC61162-1 Ed.5

Input	ACN, DDC, HBT, SRP
Output	ALC, ALF, ARC, DDC, HBT, SM1/2/3/4, SMB, SRP

4.3 IEC61162-450 transmission group

Input	MISC, TGTD, SATD, NAVD, VDRD, RCOM, TIME, PROP, BAM1, BAM2, CAM1, CAM2, USR1 to USR8, NETA
Output	MISC, TGTD, SATD, NAVD, VDRD, RCOM, TIME, PROP, BAM1, BAM2, CAM1, CAM2, USR1 to USR8, NETA (default: RCOM)

4.4 Other network functions (except IEC61162-450)
ARP, ICMP, SSDP, HTTP, Syslog

5 POWER SOURCE

5.1	Terminal unit	12-24 VDC: 6.0-3.1 A (Transmitting), 2.0-1.2 A (Receiving)
5.2	Printer (option)	
	PP-520	24 VDC: 1 A max.
5.3	AC/DC power supply unit (option)	
	PR-241	100-230 VAC, 1 phase, 50-60 Hz, 24 VDC from battery

6 ENVIRONMENTAL CONDITIONS

6.1	Ambient temperature	
	Antenna unit	-35°C to +55°C (storage: -35°C to +70°C)
	Other indoor units	-15°C to +55°C
6.2	Relative humidity	95% or less at +40°C
6.3	Degree of protection	
	Antenna unit	IP56
	Terminal unit	IP20 (IP22: option)
	Distress alert/received call unit/ SSAS alert unit	IP20 (IP22: option, bulkhead mount)
	Alarm unit	IP22
	Junction box	IP20 (IP22: option, tabletop mount)
	Printer/ Keyboard	IPX0
6.4	Vibration	IEC 60945 Ed.4

7 UNIT COLOR

7.1	Antenna unit	Upper: N9.5, Lower: 2.5PB3.5/10
7.2	Terminal unit	N1.0
7.3	Junction box	N2.5
7.4	Others	2.5GY5/1.5

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Declaration of Conformity

0575 0097

We FURUNO ELECTRIC CO., LTD.

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(Address)

declare under our sole responsibility that the product

INMARSAT-C MES FELCOM20
(Serial No. 1002-08xx-xxxx)

(Model name, type number)

to which this declaration relates conforms to the following standard(s) or other normative document(s)

EU

Directive 2014/90/EU on Marine Equipment (MED) as amended the Implementing Regulation (EU) 2025/1533

SOLAS 74 Reg. IV/7, IV/10, IV/14 & X/3
IMO Res. A.570(14), A.664(16), A.694(17), A.807(19), MSC.36(63), MSC.97(73), MSC.147(77), MSC.191 (79), MSC.263(84), MSC.302(87), MSC.306(87), MSC.431(98), MSC/Circ.862, COMASR Circ.32

UK

UK MCA Merchant Shipping (Marine Equipment) Regulations 2025 (MER) as amended MSN 1874 Amendment 11

SOLAS 74 Reg. IV/7, IV/10, IV/14 & X/3
IMO Res. A.570(14), A.664(16), A.694(17), A.807(19), MSC.36(63), MSC.97(73), MSC.147(77), MSC.191 (79), MSC.263(84), MSC.302(87), MSC.306(87), MSC.431(98), MSC/Circ.862, COMASR Circ.32

(title and number of the requirements)

For assessment, see
- EC-type examination certificate (Module B) MEDB00008BV (Inmarsat-C), MEDB000087D (EGC): DNV AS (0575)
- Product Quality System certificate (Module D) MEDD00002CD Rev.10: DNV AS (0575)

For assessment, see
- UK-type examination certificate (Module B) MERB00008BV Rev.0 (Inmarsat-C), MERB000087D Rev.0 (EGC): DNV UK Ltd. (0097)
- Product Quality System certificate (Module D) MERD00002CD Rev.8: DNV UK Ltd. (0097)

On behalf of Furuno Electric Co., Ltd.

Nishinomiya City, Japan
9 February 2026

(Place and date of issue)

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